

Before the  
Federal Communications Commission  
Washington, D.C. 20554

In the Matter of )  
 )  
Amendment of the Commission’s Part )  
90 Rules in the 904-909.75 and 919.75- ) WT Docket No. 06-49  
928 MHz Bands )

Amended Comments  
of Telesaurus Holdings GB LLC

Telesaurus Holdings GB LLC (“Telesaurus”) holds the majority of the Location & Monitoring Service Multilateration (“LMS-M”) A-block licenses in the nation.<sup>1</sup> Telesaurus and affiliates are briefly described in Attachment 1 and footnote 1 hereto. Telesaurus hereby submits its comments on the Commission’s Noticed of Proposed Rulemaking (“NPRM”).<sup>2</sup>

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<sup>1</sup> See Exhibit 1 hereto for a summary of Telesaurus and its affiliates. These Telesaurus LMS-M licenses are for markets with approximately 80% of the nation. These licenses were previously held by Warren C. Havens (“Havens”). Mr. Havens assigned these licenses to Telesaurus earlier this year. Mr. Havens is the majority interest holder in and President of Telesaurus. Telesaurus has affiliates that are also majority owned and managed by Mr. Havens, Telesaurus VPC LLC (“TVL”), Intelligent Transportation & Monitoring Wireless LLC (“ITL”), and AMTS Consortium LLC (“ACL”) (the “Telesaurus Affiliates”). Mr. Havens formed and developed TVL, ITL, and ACL in large part to support nationwide development of wide-area Intelligent Transportation System (“ITS”) wireless based upon the Telesaurus LMS-M licenses. LMS, with DSRC are the two FCC-designated unique and much needed ITS radio services (47 CFR 90.350).

<sup>2</sup> *Notice of Proposed Rulemaking*, FCC 06-24, WT Docket 06-49, released March 7, 2006.

These Amended Comments consist principally of the Comments of Telesaurus timely filed on May 30, 2006, along with corrections and certain new and amended text.

Request to Accept Late Filing: For reasons given in Exhibit 4 hereto, and those immediately below, Telesaurus hereby requests that its Amended Comments filing be accepted and considered, and that it replace the Comments filed yesterday, on May 30, 2006 which had inadvertent errors and was not as complete. Also, in addition to the reasons noted above, the nominally late filing should not materially prejudice any party planning to file Reply Comments, and accepting it will provide a more complete record on the matters of this NPRM. In addition, Telesaurus hereby certifies that it will email a copy of these Amended Comments to all parties who supplied an email address in the cover sheets of their Comments (and any others whose email Telesaurus finds available).

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1. Essential Opposition Position,  
and Request for Termination of NPRM  
and Proper Conclusion of RM-10403

Telesaurus could not be more opposed to the speculative and unwarranted trade-off proposal in the NPRM: grant of use “flexibility” for take backs of technical rights, including power and time of use. Further, the Bureau is entirely aware of the Havens-Telesaurus position, and that of Progeny and Part 15 interests: these have all been aired in RM-10403. Rather than conclude RM-10403 as called for under Commission Rules and the Administrative Procedures Act, properly weighing the public interest benefits of each parties presentations, made over a long period of time at major costs to all participants, the Bureau “terminated” that proceeding. The “termination” only had the effect of discarding all comments other than Progeny’s, which were adopted without good cause as the basis of the NPRM. Even if the NPRM had good ideas, the procedure is so offensive to due process rights that it must be opposed. The Bureau should, instead, terminate this NPRM and go back and properly conclude RM-10403, including addressing all parties’ comments, with a proper balancing of all valid public interest arguments. Only then can it proceed under due process with any NPRM that may be called for. Telesaurus does not believe any NPRM is called for on a speculative basis, as further discussed below.

These Comments are submitted in protest for reasons noted above and below, especially in the sections on legal issues and objections. Telesaurus reserves all rights it has with regard to these objections and the prejudice and damage caused by the NPRM itself and further damage caused by any rule change decision along

the lines suggested in the NPRM that result in reduction of the technical rights of LMS-M under current rules (including reduction of power and time of use) and adverse effects upon the entire LMS-M radio service<sup>3</sup> for its intended ITS purposes that are more in the public interest and needed than any additional general “flexible” radio service that NPRM wrongly suggests is feasible at debilitated power and time limitations.

## 2. Related Affiliates Comments, And Supporting Materials

To the extent not inconsistent with the Comments herein, Telesaurus agrees with, references, and includes herein the Comments and its attachments submitted in this matter by Warren Havens and the Telesaurus Affiliates (defined in Footnote 1 below) (the “Affiliates’ Comments”). The text of certain Exhibits cited herein are, as the Exhibits state, instead included as attachments in the Affiliates’ Comments.

## 3. Telesaurus’ Pending Request to Extend the Pleading Cycle

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<sup>3</sup> There are actually two competing services due to the spectrum cap in LMS-M, and this was properly established so that this unique wide-area ITS radio service would have two separate entities developing and trying out competing technologies, systems, and services. A rule making for both services is inappropriate, inaccurately treating them as if one service. At most, only rules that are clearly beneficial to both services should be adopted for both in one rulemaking. The NPRM falsely states that LMS-M is not in development in acceptable time frames. Only Progeny, Bruce Fox, and PSC Partners asserted that LMS-M for them is obviated and basically hopeless under current rules: however, none of them proposed any alternative service they could pursue under new rules and even an outline of how they would go about achieving it. Havens and Telesaurus stated in the clearest terms the opposite, both in their final presentations in RM-10403 (see Exhibit 3), and in the five-year construction extension request granted to Havens (Exhibit 2). Thus, the NPRM rests upon a false foundation, by statements of Havens-Telesaurus as accepted by the FCC in this extension grant, and as elaborated on in their final presentations in RM-10403.

This request is attached as Exhibit 4 below. Commission staff advised counsel to Telesaurus informally that this would not be or likely not be granted. In any case, Telesaurus has not seen as of this time a decision on this request. Telesaurus believes its request is clearly in the public interest, not merely in its private interests, especially where the “private” interests of Telesaurus, the licensee with the vast majority of the licenses in one of the two competing LMS-M services, based upon the reasons given, are clearly in the public interest. It is clear that the Bureau, not Telesaurus, is pursuing “private” party interests in the NPRM—those of Progeny, at the great expense and prejudice to the parties active in the subject 902-928 MHz band: Telesaurus for LMS-M and nationwide ITS radio services intended by the Commission (and US DOT-FHWA and other agencies), Part 15 interests, and Federal, ISM, and Amateur radio operators. Telesaurus objects to the Bureau not granting and not even timely responding to this reasonable request for extension of the pleading cycle, and intends to appeal the denial that, as noted above, FCC staff informally suggested will eventually issue.

Considered together— (i) this treatment, at least an effective denial, of this reasonable request, (ii) combined with the NPRM’s violation of due process and fair balancing of clear public interest presentations, including by its specious “termination” of RM-10403 when it actually adopted the Progeny request and position in RM-10403 (discussed in the section below regarding legal objections and statement of issues), (iii) and the NPRM’s lack of any mention and support for high-public-interest purpose of LMS-M: wide-area ITS radio service, (iv) along with the

entirely baseless grant of constructions first to Bruce Fox then to Progeny (each of whom, for no reason other their own choice to do nothing, showed no due diligence whatsoever, including since their position in RM-10403 was that LMS-M was obviated under current rules), (v) and for other reasons noted herein—is a dismal due process toward any real public interest goal of LMS-M.

#### 4. LMS-M, the wide-area ITS radio service in the US:

LMS-M, as the wide-area ITS radio service in the United States,<sup>4</sup> has a unique, highly valuable, practical, and bright future that no other radio service is designed to or intending to focus on.

Telesaurus is making excellent progress in all of the elements needed, including technology and equipment, drawing from major international developments in ITS and ITS wireless, including certain ITS-focused 3G and 4G modulation, SDR, IP core, Telematics, multi-mode location technology,<sup>5</sup> and

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<sup>4</sup> See 47 CFR §90.350 and the extensive past rulemaking Orders in LMS-M, as well as the discussion of LMS-M in the rulemaking Orders concerning the other ITS radio service, DSRC.

<sup>5</sup> The Progeny position in RM-10403 and the similar NPRM's treatment of wireless location technology and service lack depth and practical meaning. Wireless location, still in its infancy, is specific to defined services. E911 is not close to the same service as fleet location or location of assets in a warehouse, or kids in an amusement park. In any case, LMS-M is meant for ITS specific location and related communication, and these involve particular forms of ongoing location of vehicles and assets in transport for critical purposes, from safety of life, to efficient traffic flows, to "Homeland Security" functions. No one location method is sufficient for an acceptable level of service for any major or mission-critical ITS wireless system. For example, it is well known and accepted that GPS has substantial errors, can be easily jammed and spoofed (tricked) even by simple easy-to-make devices (plans are on Internet), and is blocked in urban canyons and other situations. Terrestrial

utilization of vehicles' orders-of-magnitude better platform for wireless than handheld radios (which is the prevailing dominant paradigm for advanced wireless).

Wide-area location-based ITS wireless should also be integrated with short-range ITS wireless, namely DSRC (and in some cases, certain 5.9 GHz public safety wireless). This is entirely feasible if planned appropriately, and politically practical as long and only as long as LMS-M remains dedicated to such ITS radio service under Commission rules and licensee commitment.<sup>6</sup> These developments, as part of the much broader ITS development, are taking place worldwide in the needed timeframes. Components include various interrelated wireless location and communication technology and equipment, onboard land vehicle Telematics equipment (and similar equipment for maritime, rail, and air transport vehicles), service software, international standards, interfaces with public safety and highway authority organizations, and many public-agency and private companies cooperative developments involved in regional, nationwide multi-modal ITS. Such ITS

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location (mostly, forms of "multilateration") is needed to augment GPS both to increase accuracy and to reduce chances of deliberate disablement of GPS. Other forms of location are also needed for the level of service planned for in ITS circles, including onboard inertial guidance, so that location even inside tunnels and buildings will continue. Further, increasingly location will be done on WLANs, and WLANs will be in homes, workplaces, and most visited public places. Thus, WLAN location and WWAN location must be integrated, and at least planned for. In sum, the suggestion in the NPRM, echoing that of Progeny in RM-10403, that terrestrial multilateration is no longer viable or needed, as if GPS and E911 solved the location problem, is ignorant and in error, especially when expressed in the context of mission-critical ITS wireless.

<sup>6</sup> Telesaurus and its Affiliates will be pursuing this on a partly non-profit and not-for-profit basis, and they have stated for years in various FCC filings and other public releases. This will assure perpetual dedication of spectrum for wide-area ITS radio service for core ITS applications most central to public safety and pollution reduction, and for environmental monitoring.

development will result in increasingly safe and efficient flow of land transportation, and also other modes of transportation, of persons and assets.

As the Commission wrote in LMS-M rulemaking, and as has been amplified in the ITS community worldwide, this is essential for (in the US alone) saving tens and thousand of lives a year, saving billions of dollars in lost workplace productivity resulting from traffic congestion, greatly curbing pollution, fulfilling or advancing core “Homeland Security” objectives (including enhanced highway flow management and relocation, and victim assistance, in major urban emergencies; enhanced tracking and security of container shipments within the US; and better spotting and tracking of suspects in major crises) and other high public interest goals.

The NPRM missed the above, as if LMS-M was (as Progeny wrongly asserted) a hopeless or “obviated” idea.<sup>7</sup> Apart from core public safety wireless, or even

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<sup>7</sup> The NPRM and Progeny (in RM-10403) completely miss this, and diverge into speculation on what “flexible” things someone may, someday, in some unexplained way, do with the LMS-M spectrum and how that may put a crimp into the rights that don’t exist under law of unlicensed users and equipment sellers. This is all speculation, especially how such an undefined LMS-M may interact with indefinable Part 15. An estimation cannot be approached apart from a full set of assumptions on both sides and complex computer modeling, and even then only actual tests will show much of value to rely upon. Even there, Part 15 use cannot be reliably determined—it is unlicensed, and there is no record of where the radios are being used. Only some Part 15 systems can be indicated, if the system operators want to cooperate and do so honestly and objectively with full disclosure. That is far from certain, and not suggested in the record of LMS-M rulemaking to date. Part 15 use is for local purposes (or light use for longer range point-to-point, or point-to-multipoint) as the Commission often stated in the LMS rulemaking Orders. Proper LMS-M under Commission rules and intent focuses the spectrum on long-range ITS-application links to vehicles on roadways, that is generally away from local use by Part 15 devices: this provides *spatial separation* and resultant

considering it,<sup>8</sup> the ITS radio services are as important and needed as any that the FCC has created and maintain. That ITS is a major international development that takes a lot of work and time (including the wireless components) and that FCC staff apparently have not (since the early LMS-M days) kept up on it, do no diminish this importance.

Telesaurus needs additional time to summarize these unique and important aspects of ITS wireless that LMS-M can fulfill and present them in this proceeding, especially where the NPRM was devoid of any mention of ITS radio service, the goal of LMS-M.

In addition, the Telesaurus' plan for its competitive nationwide LMS-M service is unique due to the Telesaurus Affiliates' complementary nationwide FCC licensed spectrum in other bands, including the majority of the AMTS 217-220 MHz

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interference mitigation. Critical peak-hour use for wireless to vehicles is at rush hours, as opposed to other hours for Part 15 WLAN's and other systems and individual uses: this provides *time separation* and further resultant interference mitigation. For this ITS vehicular wireless, the LMS-M power and time of use cannot be reduced, nor would reduction help Part 15, since that would cause shorter spacing of LMS-M network sites, likely resulting in generally more, not less, average power in the local areas of Part 15 use. Progeny and the NPRM are speculating on problems that don't exist now and do not have to arise. But the time to deal with any problem in a major Commission relief proceeding is after proof of the problem and proposals for practical solutions based on compelling due diligence.

<sup>8</sup> Considering that the diverse public safety community does not have a history or structure to very effectively "interoperate" in wireless and other matters, radio services like LMS-M that in large part can fulfill goals of public safety entities in the US, some directly and many other indirectly, have increased importance as major augmenters of public-safety wireless. LMS-M licensees can, being private and nationwide (Telesaurus and Affiliates), develop more quickly and over a wider area than particular public safety organizations. Telesaurus has plans for this in conjunction with certain Federal entities including NTIA OSM.

band nationwide (see Attachment 1).<sup>9</sup> This additional spectrum will allow far more cost effective wide-area ITS wireless than by use of LMS-M spectrum alone. Telesaurus needs additional time to present these capabilities and benefits, and why the NPRM's suggested changes will seriously damage them.

## Legal Objections and Issues Regarding the NPRM

### 5. LMS-M, as the wide-area ITS radio service in the US Is Harmed by the NPRM, and Will Be Seriously or Fatally Damaged by the NPRM's Technical Rights Take Backs

A goal of the notes in this Section is to discuss essential technical reasons why the NPRM's proposed Technical Changes would impose major restrictions on the Telesaurus Plans, on use of any LMS-M for ITS Mobile Systems, and any other use of LMS-M for wide-area wireless services principally to vehicles on highways.

In sum, if properly planned and implemented, as Telesaurus is pursuing, LMS-M can succeed very well on a technical basis, especially if it is combined with a band more suitable for the highway coverage in the majority rural parts of the nation such as you plan with your 217-222 MHz.

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<sup>9</sup> Telesaurus and Affiliates have succeeded in their plans first described to the FCC and the wireless industry in year 2000 to obtain 900 and 200 MHz in the majority of the nation for the purposes outlined herein. This has involved seven FCC spectrum auctions, as well as major post-auction acquisitions, that continue. They now hold 6 MHz of 900 MHz LMS-M (and several hundred complementary 900 MHz MAS geographic licenses), and 1-3 MHz of 200 MHz AMTS and 220 MHz. They hold this 900 and 200 MHz each in approximately 80% of the nation. Generally, where their geographic AMTS spectrum is encumbered by alleged site-based AMTS stations, they hold (unencumbered) LMS-M. The LMS-M will be used primarily in urban areas, and the AMTS primarily in rural areas where less spectrum but lower-frequency, longer-range propagation is highly valuable for Cap Ex and Op Ex savings, and for speed to deploy. The two bands are also better for the major emergency wireless services that Telesaurus and its Affiliates plan, noted herein.

However, if the technical ideas in this NPRM were implemented, it would seriously damage LMS-M used as you plan for vehicle-centric wide-area location and communications systems for mission-critical Intelligent Transportation System (“ITS”) purposes, or for any LMS-M systems subject to substantial uncontrolled unlicensed (“Part 15”) device operations.

Further, the NPRM itself has caused substantial damage to LMS-M and Telesaurus’ pursuit of ITS radio services with its LMS-M since it threatens rule changes that would damage or destroy such pursuit (see this section below), since the alternatives it proposes are not viable (see Section 9 below), since the process employed violates due process (see Section 10 below), and since it evidences deliberate disregard of the public interest involved in LMS-M, ITS radio services, and fair treatment of licensee competitors (Telesaurus holds 80% of one of the two required LMS-M competing services: the A block) and for other reasons noted herein. Combined, these cause for Telesaurus and its Affiliates, with honest and realistic assessments of their regulatory foundation (FCC licenses, and the treatment and intentions by the regulatory) serious damage, commencing with stunting the licensees’ developments in progress, due the greatly increased risks the NPRM poses (if the NPRM’s ideas are adopted, much of this ongoing development will be a waste of time, expense, and goodwill) and due to diverting time and costs to this meritless, unfair, and unlawful NPRM.

Part 1: Summary Comments and Estimations from Dr. Daniel Devasirvatham.

Dr. Devasirvatham is Chief Technologist, Federal Wireless and Range Systems, SAIC, San Diego, CA. He has more than 25 years experience in mobile radio and satellite communications, and contributed to the development of digital cellular mobile radio communications. He is a member of APCO's homeland security committee and contributor to the P25 public safety communications standards activity. The below are his comments on technical paragraphs (in parentheses below) from the NPRM:

(28) The reduction in power from 49.2 to 10 watts (a factor of 4.9) would significantly increase the number of cells required to completely cover an area. In a rural setting, this could reduce cell radii by the square root of the power ratio, or a factor of 2.5 and in more cluttered areas, by the cube root, or a factor of 1.6 times the present cell size. The number of cells required, which is inversely proportional to the square of the radius, would increase by a factor of 4.9 and 2.7 times, respectively. This would severely compromise the economics of the LMS band.

The matching increase in the number of cells would balance out the reduction in power in rural areas, since the total power in a given area, due to the greater number of lower powered cells, is still the same. In a more cluttered area, with a propagation constant of 3, the power per unit area would drop to 55% of the former value (only about 2.6 dB). This could be a modest improvement in interference, but requiring the LMS license holder to build 2.7 times more cells. The economic trade-off is not viable.

(29) Here the change in power is from 300 w to 10 w. the 30-fold decrease would require a 30 fold increase in sites in rural areas, with no improvement in total interference in a given area, and about a 10-fold increase in the number of sites in more cluttered areas. There is no net reduction in interference over an area in the first case and a reduction of a factor of 3 (4.7 dB) in more cluttered areas. Again, the impact on the economics of LMS is devastating.

(30 and following) Re alternative forms of modulation, one of the uses contemplated by Telesaurus in to provide additional spectrum for public safety.<sup>10</sup> The public safety community has been federally mandated to use the P25 standard for its radios. These have a fixed, narrowband channel bandwidth of 12.5 kHz in Phase 1. There is no provision for spread spectrum modulation of any type. The only way to execute this business plan is to permit non-hopping fixed narrowband signals as at present.

Additionally, frequency hopping or spread spectrum systems require that all users know the correct hopping patterns or spreading codes to be able to join and operate in a system. Since public safety users could come from a wide geographic

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<sup>10</sup> Telesaurus has worked with Dr. Devasirvatham and other advisors on this program for years. It involves both provision of spectrum capacity on a permanent basis, as well as caches of portable repeaters and end-user radios, coordinated with Federal and other public safety organizations involved in emergency response. Telesaurus' Affiliates are also involved, with their supplemental hundreds of MAS 900 MHz geographic licenses, and their near nationwide 200 MHz licenses. The core capacity and services to public agencies under this program will be conducted permanently on a nonprofit or not-for-profit basis. When fixed networks are developed with the same spectrum, the same core capacity and services will be maintained and shifted over to these at an appropriate time for the geographic areas involved, and additional capacity will be provided on preemption basis in emergencies.

area to aid in large scale disasters like Katrina, this could require a massive reprogramming of all their radios. This is infeasible. This approach only further complicates an already troublesome interoperability problem among first responders, which is causing the government serious concerns.

(31) Permitting Part-15 type modulations for LMS could be useful in certain applications.<sup>11</sup> However, this does not mean that existing part 15 subscriber devices will operate with the higher power LMS sites, since the existing part 15 subscriber devices have much lower transmitter power. Thus there would be a significant imbalance between the uplink and downlink, reducing their ability to operate within the entirety of an LMS cell.

Part 2: Additional technical reasons (some partially redundant to Part 1 above).

The following includes input from Telesaurus technical advisors, including Dr. Joseph Ho of San Jose, expert in advanced wireless location and communication technology and systems, along with Telesaurus senior staff.

Below, by “WWANs” we mean LMS-M wireless wide-area networks, by “WLANs” we mean wireless local area networks using unlicensed devices and

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<sup>11</sup> Telesaurus notes that LMS-M rules already allow any type of modulation, and in LMS rulemaking, the Commission also decided that LMS-M operators could use Part 15 type accepted equipment, if they so elected. However, there is no suitable Part 15 equipment for the principal mission-critical ITS vehicular wireless, and public safety emergency wireless, that Telesaurus and Affiliates are pursuing, elsewhere indicated by these parties in this proceeding.

spectrum, in either 2.4 GHz or 5 GHz,<sup>12</sup> that have suitable security and integration with the WWANs, by “M-WLAN’s” we mean mobile WLANs located in vehicles, linked to the vehicle’s WWAN’s terminal,<sup>13</sup> by “Part 15” we may systems using FCC type-approved unlicensed devices in 902-928 MHz when operating in your LMS-M band, and by “Coverage” we mean provision of radio-service of the desired traffic capacity and grade(s) of service.

Issue 1: Power (and some on time of use)

(a) Would a major reduction in LMS-M power, as proposed in the NPRM, even assuming no reduction in time of use (as also proposed in the NPRM), adversely affect LMS-M WWAN cost, speed, and feasibility of Coverage? As discussed below (and above) yes. (b) And if such reduction were imposed, would the changes required to maintain the Telesaurus plan result in any less interference potential to Part 15? As discussed below (and above), no.

(a) A reduction of power of the magnitude range proposed in the NPRM, all other technical parameters being unchanged, would require a major (see below) increase in the number of base stations, spaced more closely and generally at lower heights, needed for the Coverage, and thus dramatically increase the cost and time to achieve Coverage. As is well known, planning for, securing, and maintaining transmitter sites in a wide-area system is expensive and time consuming, and

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<sup>12</sup> Or potentially, under the Telesaurus Plan, the licensed 5.9 GHz DRSC spectrum, and/ or the licensed 4.9 GHz spectrum. In this summary memo, we do not address that spectrum and its possible use in relation to LMS-M systems for ITS purposes.

<sup>13</sup> See preceding footnote.

increases both capital and operating expenditures. It also increases the need for intersite links, as well as points for failure and attack, which are a concern in systems providing mission-critical communications.

(b) Such reduction, if imposed, would as just stated (see also below) require a major increase in the number of sites, more closely spaced, and generally closer to the surrounding terrain. Even if the major increase in costs and increase in time needed to deploy LMS-M WWANs in this situation could be borne, similarly effective base-to-mobile-to-base power link budgets would be required along all of the highways and other critical areas for which Coverage is required. Part 15 systems operate in homes, offices, other indoor facilities, and some special outdoor situations. The lower and more closely spaced are the LMS-M systems, the more they will be close to the Part 15 systems. If, however, the LMS-M systems are higher up on hills, tall buildings, large self standing towers (and often these are located away from substantial residential and business areas, which would be selected by LMS-M operators to minimize their interference received by Part 15 devices within the Safe Harbor), they will generate less power at these areas used by Part 15. The power needed for the LMS-M systems is based on the vehicle radio terminal's receive  $S/N+I$  (Signal to Noise + Interference) requirement, and the capacity (certain data rate with certain QoS for voice and other real-time communication, etc.) is related to what is needed for the service to succeed. If this terminal  $S/N+I$ , and this capacity, must be achieved by lower power base stations, then they must be more closely spaced, and must also generally be lower (for the

antenna pattern to work without excessive down tilt, and since there are not that many high sites for close spacing.)

A reduction in the transmission power will reduce the link budget and thus adversely affect the cell coverage and the link quality. To satisfy the required bit error rate given the reduced link quality, the transmitter must adopt a radio configuration that provides higher redundancy. This will reduce the data rate and capacity. Areas close to the cell edge may lose service altogether due to insufficient signal to noise ratio.

Installing additional base stations can generally allow the system to recover the lost data rate and capacity. However, additional base stations will increase the inter-cell or co-channel interference and may require the use of a more conservative frequency plan and radio configuration. This, in turn, may limit achievable system capacity.

In general, a reduction in transmission power will reduce the data rate and system capacity. Depending on the particular scenario, installing more base stations may allow the system to make up the lost capacity. However, this is achieved at high cost as additional base stations will incur significant equipment, real-estate, backhaul connection, core network port, operations, and maintenance costs.

When more base stations are installed, there is an increased chance that the LMS-M base station is in the vicinity of the part-15 radios. Apart from base stations, repeaters may also be necessary to ensure acceptable LMS-M coverage.

These changes to the LMS-M network design may not necessarily result in lower interference to part 15 radios at all locations. Indeed, as noted in footnote 7 above, if, by loss of power and time of use, the LMS-M systems are not viable for cost effective wide-area ITS wireless to vehicles, that will result in more conflict with Part 15 systems and devices in space and time, due to the shift from focusing coverage on roadways and roadway peak hour use, to more general wireless coverage of populated residential and business areas where the Part 15 devices are principally used.

Following are estimations of results of decrease in LMS-M system transmitter power and time of use, and consequent lower base station antenna heights. (See Part 1 for estimations using the more drastic figures from the NPRM. The following are in addition.)

(1) If power is cut by 1/2, and by 3/4 (all other things being equal), these represent 3dB and 6dB loss in the link budget, respectively. A good estimation is that in a rural area, reducing the power by a factor of 2 will reduce the radius by a factor of 1.4 (square root of 2) and increase the number of required cells by a factor of 2 (square of 1.4). For more cluttered areas, reducing the power by a factor of 2 will reduce the radius by a factor of 1.18 (cube root of 2) and increase the number of required cells by a factor of 1.4 (square of 1.18). Similarly, reducing the power by a factor of 4 will reduce the radius by a factor of 2 and increase the number of required cells by a factor of 4. For more cluttered areas, reducing the power by a factor of 4 will reduce the radius by a factor of 1.4 and increase the number of

required cells by a factor of 2. However, such major percentage increases in the required number of cells or base stations will result in far more than those increases in Cap Ex, Op Ex, and risks, including (i) due to greater time to secure and maintain the sites (time is always a critical factor in any new enterprise, including due to substantial overhead costs and risks), and (ii) due to the greater complications in and failures of the more complex system. Adding complexity and point of failure in a mission-critical system are major problems that must be avoided, especially in early stage deployments. Such systems should be gradually enhanced and made more complex (if needed for capacity, features, and performance) only as the previous stages are proven and secured. PMRS ITS-based mission-critical wide-area wireless is very different from CMRS systems or Part 15 based systems.

(2) If height reduced by  $1/2$ , and in  $3/4$  (all other things equal): Based on a simple model, these represent a minimum of about 4.2dB+ and 8.3dB+ loss in the link budget, respectively.

(3) If time of use (assume granularity is in the second to microsecond range, not hourly or daily) is reduced by  $1/2$ , and by  $3/4$  (all other things being equal): If time of use is reduced by  $1/2$ , the capacity is reduced by 50%. You need to at least double the number of base stations in order to maintain the original capacity. If time of use of reduced by  $3/4$ , the capacity is reduced by 75%. You need to have at least 4 times the number of base stations to maintain the original capacity.

If, as discussed above, the Telesaurus LMS-M systems need to use many more base stations for coverage, since the range will be shorter, then the average height would be lower, since (i) the antenna needs to have a fairly broad coverage pattern for cost effective initial buildout with each antenna covering a large area without too much directivity, and such antennas that would overshoot the nearby area to be covered if not located lower to the ground, than if used with higher power at more remote locations where close in coverage is not critical (and that, in any case, can justify additional antennas and sectors for close in coverage since there would be far fewer high power sites), and (ii) there are relatively few very high sites to choose from in any given major market (Part 15 device use is not much active in smaller markets, especially in systems): such high sites are normally only on edges of markets on hills or large self-standing towers (often guyed, that must be in relatively cheap market-edge land) and on tallest downtown buildings. (High broadcast towers are not practical, wherever located, due to very high power and other reasons.) This height issue is important (along with lower power and less time of use: which combine to require more sites) since lower height, along with more sites, combine to bring the LMS transmitters closer to areas of use by Part 15 devices.

The antenna height is an integral part of the path loss equation (such as the Hata model). Higher antenna results in smaller path loss, and vice versa. If Telesaurus needs to install more base stations and use smaller cells, it can reduce the height of the antenna. To maintain coverage, every location must meet a

required S/N+I ratio as noted above. Thus, lowering the power and installing more base stations at lower height might not necessarily produce lower interference to part 15. See above example of 55% drop in watt per unit freq per unit area for a 4.9 times reduction in transmission power can demonstrate this.

Issue 2: Time of use (further discussion)

Will Reduction in time of use of the spectrum result in less capacity per spectrum per cell or sector? Will it also, like reduction in power, require more closely spaced base station sites to achieve the same capacity and coverage? As discussed below, yes, and yes.

The implementation of the reduction in time-of-use depends on the granularity of the time in question. If the radio is required to be turned off during certain hours of the day, then it can be implemented by automatically turning off service at the predefined hours. There is no impact to the design of the radio. On the other hand, if this means that the radio can only occupy the band for a certain percentage of time, then one implementation is to make use of a TDD/TDMA based system and artificially disallow transmission at certain time intervals. This will likely require some level of modifications to the standards-based technology Telesaurus plans to use, for example, to implement the blocking of certain time intervals. Any modification of standards based technology is expensive, adds time, creates substantial risks, and makes interoperability more difficult and less probable to achieve with the standard equipment and systems. Telesaurus' plans

involve adaptation of standards-based communication equipment, and as much as possible location technology also, for the host of benefits that are widely known.

In general, if the power level during the active period is not reduced, then the link budget of the system during the active period is not impacted. Thus the coverage of the base station is not affected. However, the reduction in time of use will effectively reduce the time when the radio can be used to send and receive information, and the capacity of the cell will be reduced accordingly. To keep the capacity the same as in a system where no restriction in time-of-use is required, would require deployment of additional carriers or reduction in the cell size and installation of more base stations. Deploying additional carriers will be detrimental since the available bandwidth is limited. Installing additional base stations and reducing the cell size is a common method used in any cellular systems to increase system capacity. However, this is a very costly approach as deploying base stations incurs additional equipment, real-estate, backhaul connection, core network port, operations, and maintenance costs.

In summary, keeping all parameters unchanged, the reduction in time of use will require smaller cells and more base stations sites in order to keep the system capacity unchanged.

Item 3: Lower power and less time of use will result in lower base station antenna heights

If Telesaurus can maintain the power and time currently available, and thus also the practically related height, it will still only use the power needed on an as

needed basis, boosting to the full power if the vehicle or other mobile radio moves into an area without line of sight or otherwise substantially blocked signal, or if encountering a substantial interfering signal where a power boost would be used to attempt to maintain the required S/N+I. However, if power and/or time are reduced, and we thus need to use many more base stations at lower heights, we may choose to use the higher limits of power more often to discourage proliferation of Part 15 devices in coverage areas critical to the ITS and public safety wireless that we otherwise could accommodate (coexist with) by using a power boost when and where needed by using fewer higher sites with un-reduced power.

Most of the modern wireless systems have power control mechanisms that will automatically increase/decrease the transmission power. A higher power is used only when necessary, for example, when the mobile is far away from the base station or the received signal is weak due to fading. Telesaurus can tune the transmitter to transmit at higher power than necessary. This will increase the interference to the part 15 radios and discourage the proliferation of part 15 systems in coverage areas critical to the ITS and public safety wireless. Nevertheless, higher power allows better S/N+I and this is especially critical in a wide-area in a mobile system, especially when using wideband technology.

Issue 4: Major advantages of vehicle platform, and loss of these under reduction in power and time.

Telesaurus plans the use of vehicles as the platform for a wide-area mobile system (as opposed to use of small handheld low-power communication devices as used in PSC and cellular systems) provides advantages: (1) ample power from the

vehicle battery and generator system (thus less need to use costly and limiting components in handheld devices where power is a limiting factor, perhaps the most limiting since computer power and use of power is increasing more quickly than handheld battery technology), (2) ample size of components (and thus less need to use costly highly integrated computer components), (3) effectiveness of larger antennas, and eventually use of multiple antenna in vehicles or embedded into vehicle body parts (which, if fact, is being planned for in the ITS and vehicle maker circles), (4) ability to provide for mobile repeaters, both in-band (in the LMS-M spectrum of the operator) and cross-band to various forms of WLAN's (on 2.4 or 5 GHz, or DSRC 5.9 GHz—the ITS mobile WWLAN, or the public safety 4.9 GHz) or to other WWAN's including public safety's analog and P25 digital high power systems.

These four related advantages are highly desirable for ITS wide areas systems principally serving vehicles, which is required for LMS-M and only LMS-M among the radio services. These advantages will be lost or seriously undermined if the LMS-M power is reduced, or time of use is reduced. If power is reduced, then use of the greatly higher and sustainable power capability of the vehicle is wasted: (1) directly, in lower-power radio transmission, thus providing reduced range (distance) of two-way communication to and from each base station, and (2) indirectly, in lesser ability to support more complex and spectrum efficient processing of modulations, voice coders, encryption, and other computing and thus and power intensive functions. Item 1 is clear. Item 2 is the case where the LMS-M

system, either one way (see above) or two way uses wideband technology (here meaning over 200 kHz wide channels, and up to about 5 to 6 MHz wide channels), that at least in a second generation will be highly desirable and practical once 3G or 4G becomes reasonably mature and cost-effectively adaptable to LMS-M spectrum for ITS radio applications. With such wideband technology, the over-the-air link will use complex modulation for high data rate content throughput, as well as encryption, forward error correction and other techniques for high speed mobile environment with various QoS classes, and MIMO (multiple input, multiple output) and smart antenna techniques. For these functions to be supported in wideband channels in cost effective wide-area systems designed to primarily serve vehicles, any power reduction of the current allowance will be a serious detriment.

While, in general, the advanced wireless communications system design, such as MIMO and high order modulation, can be applied even if power is reduced, higher power in wide area systems (used as needed) allows for maintaining the higher modulations, the required  $S/N+I$ , and the needed QoS, over large distances, various terrain, and high speeds.

A vehicle based system requires the support of handoff from cell to cell, and these handoffs must be performed within a short time interval given that the vehicle may be traveling at high speed. Lower transmission power results in smaller cells, which increases the handoff frequency. This results in higher system complexity and lower quality, such as higher probability of handoff failure. As

discussed above, ITS mission critical systems must avoid complexities that lead to increased risks and failures.

#### Item 5: Multilateration issues

Terrestrial multilateration, assuming here one way from base to the vehicle mobile terminal receiver. (The vehicle has the power and good antenna platform, so it may as well be used, for terrestrial location and GPS, and eventually inertial guidance also. Also, this will use less spectrum, since all enduser radios can use the same base station signals, whereas, where the base station needs to calculate the location by listening to enduser radio transmissions, each enduser radio must use a separate channel.) For such spectrum-efficient terrestrial multilateration location to be cost effective, the base station radios must have good power, and a reduction of the 30 W EPR currently allowed be detrimental: it will require many more sites as noted above. Otherwise for cost effective terrestrial location coverage under the less spectrum efficient method (where the base stations listen to a transmission from each mobile) the base stations would need very high gain listen-only antennas to pull in the weaker signal from the mobiles. This would also be an added cost, since very high gain antennas are complex, large, and costly, and cost more in tower lease (take up more space and impose more wind loading), and more of them are needed to cover the same area of coverage (in this case, mobile to base).

Lowering the base stations transmission power reduces the number of base stations that each mobile can detect. This reduces the number of measurements

(such as time delay measurement in a ToA/TDoA system) that the mobile stations can perform, and will significantly reduce the accuracy of the location estimation.

Issue 6: Limit on time of use, harmful to multilateration.

Multilateration based on precise timing at multiple fixed stations listening to signals from a mobile, or at the mobiles listening to concurrent signals from multiple fixed stations, relies upon precise timing. The essential idea in LMS-M location is to provide this for ongoing location of vehicles, persons, and other animate objects (and to allow related voice and data communication), each for ITS radio services. The Commission noted in rulemaking that resulted in the current LMS-M rules, that it allocated sufficient spectrum to support these constant location and related communication functions along the nation's highways for a large percentage of all vehicles. (Indeed, all vehicles can be served by methods Telesaurus is adapting and configuring for its A-block LMS.) Reduction in the time of use of the LMS spectrum will be seriously damaging not only due to loss of capacity (as discussed above) but also since this will make it more complex and thus also less reliable to achieve the multilateration with certain techniques that Telesaurus is developing.

This technique uses antenna arrays that measure the Doppler shift in arriving signal (the shift is a function of time of arrival) and from this the angle of arrival ("AoA"). The US Coast Guard and other major entities use the same essential technology, but Telesaurus contracted with a major provider of such systems to improve the systems for use in LMS-M and taking advantage of the A-block's split spectrum (the 5.75 MHz wide band block is far away from the narrow

250 kHz block). In addition, Telesaurus is working on adding a time of arrival (“ToA”) function to this angle of arrival system. With ToA technique, coupled with the AoA, then from one site the location can be determined. Often, including on edges of coverage, one site is all that is possible in the majority of the directions from said site. (The one site will have multiple fixed antennas, in an array, each measuring the incoming signal, thus performing multilateration as defined in FCC Part 90 rules from one antenna site.)

The ToA method requires precise timing between the fixed station and the mobile station: each must have absolute time so that the location signal is time stamped, read by the receiving radio that does the location calculation, when then determines the distance of the mobile by the time the signal took to arrive (based on the constant known speed of travel of radio waves). This distance is then crossed with the angle of arrival to determine the location. Of course, if more than one such fixed location station is in range of the mobile, then additional accuracy is achieved. But it is highly important to have a technique where, outside of major urban cores—where the majority of the nation’s highways and territory lies—location can be determined by one or several location stations in radio coverage range, since it will not be cost effective to surround such highway corridors and vast non-urban-core territory with location sites to perform other forms of multilateration, such as time difference of arrival (“TDoA”).<sup>[14](#)</sup>

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<sup>14</sup> We elsewhere in these Comments discuss why GPS, by itself, is not adequate for reliable and constant coverage over very wide areas, including urban canyons, and is also subject to errors, jamming, and spoofing far more easily than private-

In sum, on this issue, if the LMS-M spectrum is not available all of the time for the essential multilateration technique noted above that is needed for terrestrial location in the majority of the nation's highway corridors and territory (AoA with ToA, as described), then the interruptions in timing will add burdensome complexities to this system, since both the mobile and the fixed stations must precisely and identically block out such times. This will also use up spectrum, since this coordinated blockage must involve the fixed network regularly updating the timing at all mobile stations. And as noted above, the loss of capacity is the other major problem posed by the loss of full use of time.

Also, in general, reducing the time of use reduces the opportunity that the mobile and/or the base stations have to do measurements. It will then lead to longer time to complete location estimation. Further, the mobile might have moved during this estimation period, so it will reduce the location estimation accuracy. An opponent on this argument might argue that we do not do continuous measurements anyway as the mobile or base station normally try to detect some predefined symbols (such as sync sequence, pilot symbol or training sequence) that is transmitted from the other end. These symbols do not occur continuously anyway. However, the system must be designed to accommodate tens of thousand of location determination per minute per cell, to accommodate the planned for ITS applications, eventually to all vehicles. While this is demonstrably feasible with the

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party terrestrial location as Telesaurus plans. As elsewhere discussed in these Comments, Telesaurus generally plans to use GPS and terrestrial multilateration: neither one by itself is sufficient.

system Telesaurus has planned—drawing upon standards-based mobile broadband data broadcast technology for the core multilateration and related communications functions (as well as supplemental standards-based two-way communication technology) already being tested in the Far East and Western EU nations for core ITS applications—any loss of time of use will result in (i) loss of capacity; (ii) added complexities, related added time, costs, and risks; and (iii) deviations the subject standard-based technologies and products, which together are serious problems for a new enterprise and service aimed at market-leading high-public-interest mission-critical applications.

Item 7: Highly desirable mobile synchronized broadband broadcast, for ITS applications, will not be feasible with lowered power, restricted time of use, and resulting lower antenna heights.

Mobile synchronized multi-site broadband broadcast ("MSBB") on LMS-M for ITS radio service data broadcasting (here, "ITS Data Broadcasting," or "ITS DB"). Assume we use for ITS DB either T-DMB, DVB-H, or ISDB-T equipment on LMS-M spectrum. This equipment each makes use of relatively high power (desirable and common is in the hundred-plus W EPR range) and very high sites with omnidirectional antennas, since there is no requirement for mobile radios to talk back, and all mobile radios receive the same information at the same time. This equipment is very effective at highly reliable and spectrum efficient one-way broadcasting, and it also has inherent precise timing for the multiple site networks that can be used as a foundation for spectrum-efficient multilateration of the sort noted in item 6 below. This equipment is expensive and each base-station system

needs to be redundant (redundancy in broadcast components, power, backhaul, etc.) due to the high value of the broadcast transmission and the mission-critical nature of core ITS information. As noted, it also must be located at very high transmitter sites. It is not cost effective to use such ITS DB equipment if the LMS-M power or time of use is substantially reduced, since, as noted above, that would impose a large increase in the number of sites and use of lower sites.

In a broadcast system, the same information is broadcast to a service area regardless of the number of base stations installed. Thus adding base stations will not increase system capacity in a broadcast system, and it is desirable to use as small number of base stations as possible to reduce system cost. Lowering the power limit will reduce the range of each base station. Additional base stations will therefore be required to improve coverage even if this will not provide any improvement to capacity. This will significantly increase the system cost, which can be avoided if a higher power limit is allowed.

#### Item 9 Power per station or system

.LMS rules specify power per station or system, and allow narrowband as well as wider band systems and to be used for location and communication function. Relatively narrowband systems will be far more cost effective to initially build and operate in the critical periods of working toward system financial sustainability, since those systems are less expensive and they concentrate the permitted power in a narrower channel which thus propagates further, and thus far fewer sites are needed than using wider band systems. 30 W EPR is modest power for any

narrowband wide-area system. Power is per carrier, not per total power at a site. This is the same for a Part 15 device in the band: they have no aggregate power limit for a physical site or station. (In fact, some Part 15 vendors have made a selling point of this: how they can put many radios at one base-station site to increase capacity, and to try to get around the Part 15 prohibition on coordinated base stations, they use different hopping patterns and other techniques that are in fact either against the letter or at least the spirit of this prohibition [some also increase the power, by power amps for 902-928 MHz that are far above permitted power and are sold in the US, including at US trade shows of Part 15 vendors, and by connectors for external high gain antennas which would exceed power limits]).

Telesaurus may propose at some point in this NPRM proceeding power spectral density allowances for various forms of LMS-M base, repeater, vehicle mobile, and other transmitters. However, as noted above, Telesaurus strongly feels that it is premature to propose these at this time.

#### Issue 10: Loss of temporal and spatial separators with Part 15

LMS-M systems designed for the intended service to vehicles will have peak traffic at highways rush hours, which is different peak use of Part 15 WLANS and other Part 15 systems, most of which are located in residential and business areas. Allowing “flexible” uses but at lower power and/or less time of use, thus requiring more and generally lower sites, will make LMS-M spatially compete in time with such Part 15 systems, and also compete in space, due to closer proximity and since LMS-M would then not be able to cost effectively provide the highway-based

systems and services, and instead may have to attempt wireless service to residential and business environments.

6. LMS-M is PRMS Intended for Advanced Technology and Service--  
NPRM's Ideas to Convert it to Redundant Flexible CMRS Violates Congressional  
Intent

Telesaurus will present this section principally in a further filing in this proceeding.

LMS-M is appropriately a PMRS service, not a general commercial wireless service. The Commission gave reasons in the LMS-M rulemaking, and there have been no "market condition" changes to warrant a new look at this.

The below sections from the Communication Act reflect Congress's intentions relevant to LMS-M, at least if pursued as the Commission clearly articulated in past LMS rulemaking and as the international ITS Community is developing in terms of advanced ITS wireless services. The ideas in the NPRM will be detrimental or fatal to these public policies and sections of the Communications Act.

**"SEC. 332. [47 U.S.C. 332] MOBILE SERVICES.**

(a) In taking actions to manage the spectrum to be made available for use by the private mobile service, the Commission shall consider, consistent with section 1 of this Act, whether such actions will\_

- (1) promote the safety of life and property;
- (2) improve the efficiency of spectrum use and reduce the regulatory burden upon spectrum users, based upon sound engineering principles, user operational requirements, and marketplace demands;
- (3) encourage competition and provide services to the largest feasible number of users; or
- (4) increase interservice sharing opportunities between private mobile services and other services."

**"SEC. 7. [47 U.S.C. 157] NEW TECHNOLOGIES AND SERVICES.**

(a) It shall be the policy of the United States to encourage the provision of new technologies and services to the public. Any person or party (other than the Commission) who opposes a new technology or service proposed to be permitted under this Act shall have the burden to demonstrate that such proposal is inconsistent with the public interest.

(b) The Commission shall determine whether any new technology or service proposed in a petition or application is in the public interest within one year after such petition or application is filed. If the Commission initiates its own proceeding for a new technology or service, such proceeding shall be completed within 12 months after it is initiated."

7. LMS-M “Flexibility” Should Only Be Granted Upon Showing of Good Cause In Pursuance of Wide-Area ITS Radio Service, or Public Safety Emergency Wireless. No such Showing has been made yet by any Party, and the NPRM Attempt to Lead the Market is Uninformed, Wasteful, and Contrary to Congressional Intent

Mostly to be provided in subsequent filing. In brief, Telesaurus believe that flexibility is reasonable for LMS-M in pursuit of ITS wide area technology, equipment, systems, and services, as well as certain public safety emergency wireless systems and services but only for such purposes, and only after the licensee submits well documented details. These should also reasonably show compliance with the practical goals and rules under Part 90 Subpart M and related Orders that promulgated and described these rules, that the LMS-M licensee make good faith attempts when designing and deploying systems to consider and minimize interference to existing Part 15 device systems (the priority rights users in the area of course always retain priority). For reasons indicated elsewhere herein, this is premature at this time.

8. Flexibility" Is Inappropriate for Certain Spectrum Services, Such as LMS-M, That Were Deliberately Created by the FCC to Fulfill a Specific Market Need or a Public Safety or Other High-Public-Interest Objective such as ITS.

Flexibility is not appropriate for services which the Commission created for specific uses, particularly where the Commission determined those uses to be needed in the public interest, and where the quantity of spectrum available for such uses is relatively limited. For example, the Commission last year denied a request for flexibility to provide terrestrial service on a secondary basis in the air-to-ground ("ATG") service, determining that the public interest would best be served by

ensuring that the entire ATG band was preserved for the provision of wireless services to the flying public, given that other bands were available for terrestrial services. See Amendment of Part 22 of the Commission's Rules To Benefit the Consumers of Air-Ground Telecommunications Services, Order on Reconsideration and Report and Order, 20 FCC Rcd 19663 (2005) at para. 6 ("we conclude that the Commission's goal to promote the provision of new and innovative wireless services to the flying public, including broadband services, will be best served by requiring that the four megahertz of spectrum in the band be devoted to the provision of air-ground service").

The Commission's Spectrum Policy Task Force Report, which largely recommended greater flexibility in the regulation of spectrum, nevertheless recognized that the "command-and-control" model of regulation - where the Commission prescribes specific uses for a particular band - is appropriate where "necessary to accomplish compelling public interest objectives." The Report noted, for example, that "public safety and critical infrastructure may ... require dedicated spectrum at particular times ..." See Spectrum Policy Task Force Report, ET Docket No. 02-135, November 2002 at 41-42. LMS-M used for its intended purpose of ITS wide area radio services involve various applications that will serve directly and indirectly public agencies, including public safety entities as well as state and local departments of highways and transportation, transit authorities, school bus systems, toll road and bridge authorities, coast and port authorities, federal park authorities (some have major traffic problems) and others, including all the agencies

discussed in the LMS-M rulemaking and more fully in the more recent DSRC rulemaking. Further, such ITS wide-area radio service is being seen as a major future contributor to emergency wireless for use by and serving the goals of public agencies, including for needed command and assistance to vehicles and victims being relocated in emergencies, via implementation of nationwide or regional standardized widely used AVL (location and associated communications for vehicles)—which is the definition of LMS-M. For example, this is the topic of a lead article, “Disaster Data, the Potential for ITS [wireless] Supporting Disaster Management,” in Traffic Technology International, Feb/Mar 06. This issue also features an article on the current lack of and need for wireless location and dispatch communication for the nation’s school buses, caring the nation’s children in buses that are far less safe than regular passenger cars. School buses are the largest fleet in the nation, and are solely in need of exactly what LMS-M is designed for (and that Telesaurus and Affiliates can dramatically improve upon by augmenting their 900 MHz LMS-M (and supplemental MAS) spectrum with their 200 MHz spectrum, each in about 80% of the nation already. In addition, as elsewhere noted herein, Telesaurus and Affiliates have firm commitments to completing and launching in the near future a nationwide program based on a permanent commitment of a substantial portion of their spectrum capacity for emergency wireless for public safety responders, with caches of portable repeaters and handheld radios and supplemental equipment. Once the networks with fixed repeaters are in operation, these agencies will also have preemption rights of a major portion of their capacity

in emergencies, in addition to certain day to day use. (Telesaurus and Affiliates have presented nonproprietary outlines of these plans and commitments in various public documents, including FCC filings, for years.)

The Commission's rules contain many examples of wireless services - such as the Wireless Medical Telemetry Service, the Medical Implant Service, the Low Power Radio Service - which have been designated for specific uses and where the Commission has not provided licensees with the flexibility to provide other services. Even some non-public safety/public health services have significant use restrictions. See, e.g., 47 C.F.R. § 95.179 (limiting non-individual licensees in the General Mobile Radio Service to communications related to the licensee's business activities). See also Order on Reconsideration, FCC 05-202, in WT Docket Nos. 03-103 and 05-42, released December 9, 2005, regarding the 800 MHz Air Ground Service to air-ground service and prohibiting ancillary services (unlike LMS-M which is PMRS, this Air Ground service is commercial, but still it has this restriction to its purpose since, like LMS-M, it is a unique service dedicated to service to a component of the nation's critical transportation sector.

9. Flexible-Use / Reduced Power or Time LMS-M will not be Competitive with NPRM's Suggested CMRS or other "Flexible"-Use Services

The major CRMS and other established services, such as PSC and cellular, and new mobile broadcast services such as Qualcomm's and Crown Castle's mobile TC services, all have much higher power than LMS-M has even under current

rules.<sup>15</sup> If the LMS-M power is cut, and/or time of use is reduced, it will make LMS-M non-competitive with these existing “flexible” services that the NPRM must be suggesting it may compete with. This will not be feasible. For reasons noted above, it will take too many base stations, too much CapEx and OpEx, too much time, too much added complexity and points of failure, especially in critical early stages of operation until break even. LMS-M was well designed and allocated as a specialty PMRS service for very high public interest ITS purposes. It can be viable in this, along with the gradual but major rollout of ITS specific systems across the nation. LMS-M licensees must work at this to participate, spend considerable time and money, but that was entirely predictable when all current licensees bought their licenses at auction, if they read the LMS-M rules and underlying rulemaking. If such licensees do not want to do this, they should not be granted construction extensions on pleas that vendors have not jumped in their laps with ready-to-go LMS equipment, especially when they are not willing to expend time and funds on obtaining such equipment or a viable plan to use it..

#### 10. LMS-M for ITS, and Part 15.

Telesaurus is on record, including in its later-period comments in RM-10403 and the FCC Spectrum Task Force, in stating its view that unlicensed advanced-technology “commons” spectrum use is both in the public interest, and likely to become prevailing form of wireless in localities where all of use spend most of our

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<sup>15</sup> See Exhibit 6 containing power rules for these services.

time: residences, workplaces, and high-use public places. Indeed, Telesaurus plans for its LMS-M involves use of in-vehicle low-power mobile WLANs that will switch off to compatible (and appropriate secured and interconnected) fixed-network WLAN's when the vehicles come sufficiently close to or part close to such high-use locations that will most all, eventually, have such WLANs. Wireless must be pursued in segments to be most efficient, each with its own appropriate design. A wide-area system optimized to serve vehicles on the major roadways (and rail and water ways) is a natural candidate for compatibility with co-channel unlicensed spectrum used in WLANs and other uses in residential and business and public "hot spot" areas—especially where the wide-area vehicular system intelligently, for its users benefit, switches off to appropriate WLANs. There is no sense in using up wide-area system capacity, which will be relatively costly vs. WLAN capacity ,when the WLAN capacity can be accessed. This also will allow use of one-device for both the mobile system and the WLANs at residences, businesses, and public places. When in the vehicle, the device will work on the mobile, vehicle-installed WLAN, and when at all these other places, it will work on those WLANs, each with compatible access techniques.

Further, Telesaurus has elsewhere in these Amended Comments explained why there is a distinct separation in use of space (parts of a market) and time (peak hours) between LMS-M used as it should be for wide area ITS systems, and Part 15 as it is most always used. This explanation will not be repeated here.

In sum, the Commission had it right in the LMS-M rulemaking as far as its expectations that LMS-M for ITS wide area systems, and Part 15 for what is good at, localized systems, are compatible. Indeed, this is a good example of what the highly regarded Spectrum Task Force Report (November, 2002) suggested is one way to achieve spectrum efficiency, by intelligently combining in a band compatible higher power systems, with lower power ones. Telesaurus is proceeding with its plans consistent with the above, including standing ready to work cooperatively with Part 15 interests when and where appropriate.

However, as explained in these Comments, including in Section 5, if LMS-M is subject to power and time take backs or similar debilitating changes, it will cause LMS-M licensees to move into the space and time, and markets, served by Part 15 systems. This will then increase contention and interference, decrease spectrum utilization, and leave most of the LMS-M spectrum in the nation underutilized since the vast majority of the highways and all areas except for high-use areas cannot be cost-effectively served.

#### 11. Legal Rights, Due Process, and Other Objections to the NPRM

A. Because unlicensed users are unprotected, the FCC cannot take away rights of a licensed service to protect unlicensed users, as the NPRM suggests.

Commission rules and precedent are clear that unlicensed users have no vested spectrum rights and are not protected from licensed users. See 47 C.F.R. sec. 15.5 ("Persons operating intentional or unintentional radiators shall not be deemed to have any vested or recognizable right to continued use of any given frequency");

see, e.g., Amendment of Part 15 of the Commission's Rules Regarding Spread Spectrum Devices, First Report and Order, 15 FCC Rcd 16244 (2000) at para. 14 ("we want to reinforce here that the Part 15 rules specifically state that such devices have no vested or recognizable right to continued use of any frequency and must accept any interference received ...") See Amendment of the Commission's Rules Concerning Maritime Communications, Second Memorandum Opinion and Order and Fifth Report and Order, 17 FCC Rcd 6685 (2002) "...Instantel, Inc. (Instantel), a manufacturer of devices employed in patient, personnel and asset security systems for the health care industry, argues that we should license band managers as a means to protect the Part 15 unlicensed 217.003 MHz operators that use its products from possible AMTS interference. [FN107] We believe that it would be inappropriate to subject licensed users of spectrum to a band manager approach solely as a means to protect unlicensed users."

The Commission will only grant new spectrum access "rights" to unlicensed users where there will be no impact on the operations of existing licensees- and this is not the case under the NPRM's suggestions.

In the ultra-wideband ("UWB") proceeding, the FCC approved new unlicensed uses only after extensive studies indicated, for example, that the operations of cellular and PCS carriers would not be affected and that these carriers would not be forced to build out additional sites to compensate for the expanded rights granted to the Part 15 users. See Revision of Part 15 of the Commission's Rules Regarding Ultra-Wideband Transmission Systems, Memorandum Opinion and Order, FCC 03-33 18 FCC Rcd 3857 (2003) ("UWB MO&O") at para. 75. By

contrast, the LMS NPRM proposes, for the benefit of unlicensed users, to explicitly handicap LMS operations by reducing permitted power levels, which would require the construction of a multiple of additional sites to obtain the same coverage (see Section 5 above).

Similarly, the Commission has only permitted secondary licensed services to share spectrum with primary licensed services where such secondary services do not affect the operations of the incumbent licensees. See UWB MO&O at note 188 (citing the Commission's decision in *Aircell Inc.*, FCC 02-324 (rel. Feb. 10, 2003)).

In the past, the Commission has declined to limit the operations of other spectrum users in order to provide greater protection to Part 15 devices, or to grant additional spectrum rights to Part 15 users where the Part 15 users could show no existing problems that were impacting their ability to operate effectively. See *Allocation of Spectrum Below 5 GHz Transferred from Federal Government Use*, ET Docket No. 94-32, Fourth Report and Order, FCC 96-390 (1996) at para. 34.

Even if the unlicensed users were entitled to some protection, the FCC has not demonstrated in the NPRM that LMS-M licensees will cause problems to unlicensed users, either under the current rules or under its new proposals.

There is no evidence to support a reversal of the Commission's prior determination that the existing LMS rules appropriately balanced the needs of all users of the band, including both licensed and unlicensed. The Commission previously rejected requests for greater Part 15 rights to the band, stating that "doing so would upset the equilibrium among users of the band. Such an allocation would also ignore the secondary status of Part 15 providers in that it would afford

unlicensed devices co-primary status vis-à-vis licensed operators." Amendment of Part 90 of the Commission's Rules, Memorandum Opinion and Order, 12 FCC Rcd 13,942 (1997) at para. 50.

B. The FCC may not deprive a licensee of its reasonable reliance and expectation interests, based upon existing FCC rules and decisions, especially where the licensee has made considerable investment in purchasing the spectrum and developing related technology.

"Taking" and Eminent Domain.

Supreme Court has recognized that certain "property-like" interests attach to licenses, particularly those won through competitive bidding procedures. The best example of this is the NextWave case, in which the Supreme Court held that the FCC was barred from canceling licenses won at auction solely for the debtor's failure to make installment payments after declaring bankruptcy. In other words, once NextWave filed for bankruptcy, the bankruptcy laws prevented the FCC from reclaiming the licenses the same way that they would have been applied to prevent any other debtor from reclaiming property subject to an unperfected debt obligation. See *FCC v. NextWave Personal Communications Inc.*, 537 U.S. 293, 123 S.Ct. 832 (2003). Moreover, in adopting the competitive bidding rules contained in Section 309(j) of the Act, Congress stated that one of the objectives "recovery for the public of a portion of the value of the public spectrum resource made available for commercial use." 47 U.S.C. 309(j)(3)(C). In other words, the Commission recovers money through the auction procedures in order to compensate the public trust for the value of the public property being auctioned. The courts treat licenses like property for purposes of applying federal bankruptcy laws, Congress treat licenses

like property for purposes of receiving compensation for the licenses, the Commission should therefore treat licenses like property for purposes of a federal takings or eminent domain analysis.

Further, the IRS, as the nation's agency with much practical authority over property rights, including for purposes of capital gains, losses, tax-free exchanges, and tax-deductible donations, recognizes FCC wireless licenses as intangible property, consisting of the rights granted in the specific licenses (including underlying rules) to use the authorized electromagnetic spectrum.<sup>16</sup> For example, see the IRS ruling in Exhibit 5 below.

The NPRM's suggestions of potentially taking back essential power and time-of-use and other rights of LMS-M licenses is contrary to FCC public interest policy and arguably unconstitutional "taking" under the Fifth Amendment. While there are various US Supreme Court and lower court cases on "taking" with different holdings as to what is property subject to taking, and how much taking of the rights of such property is "taking," Telesaurus believes that under prevailing case law where the taking of license rights destroys its business plan based on current rules and Commission intent for LMS-M, and further where such taking is not based on any clearly overriding public interest, such action may be prohibited "taking." Moreover, even if such taking is not such unconstitutional taking, in this case it is against public policy of the Congress, White House, FCC, DOT-FHWA, DOT, DHS,

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<sup>16</sup> Also, under SEC regulations (and accounting industry practices), FCC wireless licenses are treated as intangible property, subject to regular revaluation of actual appreciation or loss in fair market value.

and other agencies to promote ITS systems and services nationwide, as well as public-safety emergency wireless services, including via public-private partnerships. The harm to these public policy objectives by forcing on Telesaurus (holding the majority of the separate, A-block, LMS-R competing service) flexibility it does not need for ITS systems for technical take backs that would cripple its pursuit of such ITS systems outweighs any speculative ill-formed benefits suggested in the NPRM, on questionable basis. In this regard, there is no question that, as Havens and Telesaurus plead repeatedly in RM-10403, Progeny (and any other LMS-M licensee) could seek and the Bureau could consider relief, deserved or not, via waiver requests. And again, the A-block is, appropriately, a separate competing service from the other LMS-M blocks.

#### Reliance

The D.C. Circuit has recognized that when a party in interest to an FCC raises a reliance argument, claiming that a proposed action would be inequitable in light of substantial investments made by the party in reliance on the status quo, the FCC must weigh the reliance argument as a part of its determination of which course of action best services the public interest. See *Morris Communications, Inc. v. F.C.C.* 38 Fed. Appx. 5, C.A.D.C. (2002).

The Commission must consider Telesaurus' reasonable reliance in conducting its public interest balancing. Telesaurus' reliance includes the following: Havens (now replaced by Telesaurus, as noted in the NPRM and above) presented to the FCC in relation to the Havens construction extension request (which was contested

by Mobex Communications, citing the Hilltop and Mc Cart Orders that held that unless due diligence was demonstrated toward getting equipment and in a practical time frame, that an extension grant was not justified) hundreds of pages, with summary, of due diligence and business and technical plans for it's A-block LMS-M, and an approximate timetable to complete developments and commence operations. The FCC granted this, and in the grant Order (an exhibit to the Telesaurus Affiliates Comments) stated that Havens had shown sufficient due diligence. When the NPRM came out, Telesaurus had about 16 months left on the extended construction period, and had a number of legal contracts outstanding to complete technology, equipment, etc. and research further related technology, equipment consistent with its development plan presented to the FCC as just noted. The NPRM states in clear terms that there has been no development in LMS-M since being auctioned, but Part 15 use has expanded a lot. Based on this, the NPRM concludes that LMS-M needs to be improved by "chopping off its head" (power and time of use).

Telesaurus reasonably, and in the public interest pursuit of ITS radio services and public safety emergency wireless services, relied upon the FCC grant of the above noted extension request and its findings of acceptable due diligence in its disclosed plan of development and operation. It thus is entitled to the careful weighing consideration noted above.

C. The LMS rulemaking violates Sections 316 and 303 of the Communications Act, as the FCC has not shown that the modification of LMS licensee rights, power levels, and interference protection will promote the public interest, convenience and necessity.

Section 316(a)(1) of the Communications Act provides the FCC with broad authority to modify an existing license " . . . if in the judgment of the Commission such action will promote the public interest, convenience and necessity. " The D.C. Circuit clarified in *California Metro Mobile v. FCC*, 365 F.3d 38, 45 (D.C. Cir. 2004) , that " Section 316 grants the Commission broad power to modify licenses; the Commission need only find that the proposed modification serves the public interest, convenience and necessity. " The NPRM does not justify the proposed action on public interest grounds.

Likewise, under Section 303(f), the FCC may make such regulations not inconsistent with law as it may deem necessary to prevent interference between stations and to carry out the provisions of this Act: Provided, however, that changes in the frequencies, authorized power, or in the times of operation of any station, shall not be made without the consent of the station licensee unless the Commission shall determine that such changes will promote public convenience or interest or will serve public necessity, or the provisions of this Act will be more fully complied with;"

In this case, the FCC already "ma[d]e such regulations . . . to prevent interference between [LMS-M] stations [and Part 15 unlicensed operations] and to carry out provisions of this Act when the Commission adopted the LMS-M rules. Thus, it now cannot make "changes in the . . . authorized power, or in the times of operation of any [LMS-M] station . . . without the consent of the station licensee, unless the Commission shall determine that such changes will promote public

convenience or interest or will serve public necessity or the provisions of the Act will be more fully complied with."

In evaluating whether a proposed action is in the public interest, the FCC must not only consider public benefit of its proposed action, but must also balance any public loss which it might occasion. The D.C. Circuit has invalidated FCC action based on the Commission's failure to adequately balance the benefits against the burdens of its action in the context of a licensing decision. See *Democrat Printing Co. v. F.C.C.*, 202 F.2d 298 (1952). In this regard, it was inappropriate for the Commission to disregard the Havens- Telesaurus comments filed in the RM-1-4-3.

D. The LMS rulemaking is arbitrary and capricious, and violates the Administrative Procedure Act.

The LMS rulemaking is not supported by substantial evidence, nor does it contain reasoned explanations.

To avoid being arbitrary and capricious, agency decisions must be supported by "substantial evidence." See *Ass'n of Data Processing Serv. Orgs. v. Bd. of Governors*, 745 F.2d 677, 683-86 (D.C. Cir. 1984) (arbitrary and capricious standard incorporates substantial evidence test); see also *Reservation Tel. Coop. v. F.C.C.*, 826 F.2d 1129, 1135 n. 4 (D.C.Cir.1987) ("we have held simply that an agency must supply a persuasively reasoned explanation for modifying its earlier position that is itself rationally grounded in the evidence before the agency" (emphasis added; citations omitted)). The record does not support a finding that the "petition discloses sufficient reasons in support of the action requested to justify the institution" of an

NPRM. The NPRM itself “terminated” RM-10403 and mysteriously appeared with no one at all requesting it (Progeny’s attempt was terminated), and with no particular need demonstrations by the Bureau in the NPRM for its ideas, and all of this directly contrary to the Havens-Telesaurus presentations of the progress they were making under the old rules and their plea to not disturb this by a speculative, and surely contentious, NPRM (but to deal with Progeny and other licensee’s requests on their own merits, for their own spectrum).

The FCC did not respond to Telesaurus' arguments regarding the Progeny petition for rulemaking, which forms the basis for the new LMS rulemaking.

Courts disfavor agency decisions that do not contain reasoned explanations. See, e.g., *Public Media Center, et al., v. F.C.C.*, 587 F.2d 1322, 1331 (D.C. Cir. 1978) (“As this court has repeatedly emphasized, ‘the failure of an administrative agency to articulate the reasons for a particular decision makes meaningful review of that decision impossible.’ ”); *Tex Tin Corp. v. EPA*, 935 F.2d 1321, 1324 (D.C. Cir. 1991) (“Where the agency has failed to . . . explain the path that it has taken, we have no choice but to remand for a reasoned explanation for the conclusion.”). Here, the Commission provided no explanation for its decision to grant the Progeny petition for rulemaking, in light of the contradictory evidence presented by Telesaurus in its response. In fact, by “terminating ” the proceeding in light of the duration of time that has passed since the petition was filed, the Commission essentially disregarded the Telesaurus submissions entirely.

Under LMS-M rules, including 47 CFR 90.350 (f), and associated Order decisions (as in part noted in the NPRM), the Commission decided that there must be at least two competing LMS-M licensed services in each licensed area.<sup>17</sup> Under this rule, the A-block LMS-M licensee must be one of the competitors. Telesaurus, as Holder of the vast majority of the A-block LMS, thus stand as one of the LMS competitors in most of the nation. Telesaurus thus has a major stake in this NPRM, and no other entity can speak for it, since it is an independent entity from all other LMS licensees, and under FCC rules it must be a separate competitor. As the Bureau staff that put out this NPRM surely understand, Telesaurus could not have more loudly and clearly opposed the suggestions made in the NPRM and the idea of any broad LMS-M NPRM on such premature, speculative basis.

[Execution on next page.]

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<sup>17</sup> Contrary to suggestions in the NPRM, this was not related simply to provision of general location service; it was based on the Commission intention of LMS-M providing a complex array of ITS wide-area radio services, a unique radio service being developed worldwide. These are not the same as general mobile location service. The NPRM, as well as the Progeny position in the “terminated” yet effectively adopted RM-10403, is devoid of any understanding of ITS and ITS radio services, including the sort of continual location functions involved.

Respectfully,

*[Electronically submitted. Signature on file.]*

Warren Havens  
President,  
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May 31, 2006: these "Amended Comments"  
(Original Comments dated and filed May 30.)

Appendix 1: Further, Interlined Comments within the NPRM

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Separately filed.

Exhibit 1

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IATT Tech JV  
Telesaurus VPC LLC  
AMTS Consortium LLC  
Telesaurus Holdings GB LLC  
Intelligent Transportation & Monitoring Wireless LLC

Warren Havens, President  
Jimmy Stobaugh, General Manager  
Phone (510) 841 2220 / fax (510) 841 2226  
[wchavens@aol.com](mailto:wchavens@aol.com) / [jstobaugh@telesaurus.com](mailto:jstobaugh@telesaurus.com)

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Warren Havens and these four LLC's hold 7 to 8+ MHz of FCC geographic-licensed spectrum in most of the US for private mobile radio and location services, including for licensed-spectrum 802.16e and mobile broadcast applications focused on wide-area wireless for Intelligent Transportation Systems.

This includes 6 MHz in the 900 MHz Location and Monitoring Service ("LMS") band (904-909.75 and 927.75-928 MHz) in 80% of the nation, 1-2 MHz in the "AMTS" band (217-218, and 219-220 MHz) in 85% of the nation (and a second, adjacent MHz in some Western parts), 350 kHz of "VPC" spectrum (157/162 MHz) covering a number of Western States and Eastern California, up to 1 MHz of geographic 220-222 MHz licenses in much of the nation, and from 5 to 24 narrowband frequency pairs of "MAS" 900 MHz spectrum in many major and secondary markets in the nation (this may be combined with the 900 MHz LMS noted above to yield 28-46 12.5 kHz channels). Coverage maps and other information available.

The focus of these Companies is providing long-term spectrum and related system solutions for private wireless throughout the nation, including for enhanced major public safety and critical infrastructure wide-area projects, as well as for special situations and environments. To fund this long-term business, some of this spectrum is being sold or leased long term, from time to time.

The Companies are privately held, internally funded, focused on private-wireless business projects, and do not use any public marketing or website. Information appropriate for a prospective business relation can be provided under a mutual nondisclosure agreement. All licenses noted above are listed on the FCC's website's ULS database.

Mr. Havens is the President and majority owner of the Companies. Jimmy Stobaugh is General Manager. The Companies are operated from Mr. Havens' offices in Berkeley California. Mr. Havens has been involved in FCC licensing and wireless business since the late 1980's and previously was a founder and co-owner

of a CellularOne service provider. He is also involved in nonprofit philanthropic projects including for nationwide wireless environmental monitoring. Consultants include several former FCC Bureau Chiefs, SAIC Wireless Group, San Diego, and experienced wireless engineers. The companies' IATT Joint Venture is funding certain technology, product development, and testing via their consultants, including in integrated 802.16e, location, and broadcast technologies.

The Companies' long-term goals include use of their LMS 900 MHz spectrum and AMTS 200 MHz spectrum, in conjunction with adjacent spectrum used by Federal entities, including DHS, DOT, and USCG, for a new nationwide mission-critical PMRS service that provides narrow and wide channels for PTT voice, IP data up to 1,000+ kbs, integrated location (terrestrial, GPS, and inertial guidance methods), telemetry, and interactive digital broadcast. Regional networks would be planned and pursued in this service, and eventually connected nationwide.

Also planned is ad hoc mesh networking capability, and integration with P25, 4.9 GHz, and 5.9 GHz ITS. Typically, dual 900 / 200 MHz would be used: the 900 MHz principally in urban and higher traffic areas, and the 200 MHz mostly in rural areas.

Principal contributors to these public-private regional networks would be the Companies and the noted Federal entities for spectrum, equipment companies for systems equipment, an integrator such as SAIC, San Diego (currently advising Telesaurus), for planning and execution, and utilities and rail for most of the system infrastructure (radio sites, links, etc.).

Principal core endusers of the systems, each on VPN basis, would be utilities and other critical infrastructure and transportation entities State and local public safety entities, and some Federal entities. Applications would include wide-area ITS-specific applications, with integration with ITS 5.9 GHz DSRC.

Public safety entities involved would have priority and preemption on the networks in emergencies, in addition to their day-to-day VPN use. Prior to build out of the networks and continuing thereafter, public safety entities would also have access to the spectrum for emergencies using caches of portable-repeaters and associated two-way radios.

The Public Safety VPN use would be on a subsidized low-cost basis, including due to the NTIA- DHS contributions made for their benefit, as well as tax deductions the Companies would obtain for certain contributions at no or below market cost.

One design goal of the systems and the venture is to qualify for substantial Federal funding to keep the costs low to Public Safety and certain Critical Infrastructure.

The networks would be initially built, or later enhanced, to provide substantial additional capacity to serve other entities with large vehicle fleets and mobile workforces.

Once built out, the networks would support on a nonprofit basis, very wide area environmental monitoring for protection, forecasting, warnings in emergencies, etc.

To date the Companies have completed, in the plan noted above: securing the described licensed spectrum foundation, due diligence in assessing the described markets and technologies, certain product development, the closing of and funding from transactions with major governmental and utility entities covering substantial parts of the nation to self-fund the above ongoing work, and substantial discussions with the principal Federal land and water governance agencies regarding shared spectrum, systems, and goals. We also maintain related businesses for current income.

More information may be provided under a nondisclosure agreement.

Exhibit 2

FCC *Memorandum Opinion and Order*, DA 04-3864, released December 9, 2004, granting a 3-year extension of time to construct to Havens.

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This is included in the Comments of W. Havens and affiliated LLC's in support of the Telesaurus Comments.

Exhibit 3

Part 15 Proceedings. (1) *Memorandum Opinion and Order*, FCC 03-124, ET Docket No. 99-231, released May 30, 2003, and (2) Havens and THL *Petition for Reconsideration* filed 10/7/04 in ET Docket 03-201.

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These are included in the Comments of W. Havens and affiliated LLC's in support of the Telesaurus Comments.

Exhibit 3

Ex Parte Presentations of Warren Havens and Telesaurus in RM-10403 that discuss Telesaurus' plans, including ATLIS, and its desire to not pursue a rulemaking as requested by Progeny.

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These are included in the Comments of W. Havens and affiliated LLC's in support of the Telesaurus Comments.

Exhibit 4.

(Formatting may be changed form original. Content is the same.)

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Before the  
Federal Communications Commission  
Washington, D.C. 20554

In the Matter of )  
 )  
Amendment of the Commission's Part )  
90 Rules in the 904-909.75 and 919.75- ) WT Docket No. 06-49  
928 MHz Bands )

Request to Extend Pleading Cycle  
Regarding Notice of Proposed Rulemaking

Expedited Action Requested

Telesaurus Holdings GB LLC ("Telesaurus") holds the majority of the Location & Monitoring Service Multilateration ("LMS-M") A-block licenses in the nation.

**18** Telesaurus and affiliates are briefly described in Attachment 1 and footnote 1 hereto. For reasons given below, Telesaurus requests an extension of the pleading cycle in the Notice of Proposed Rulemaking captioned above released on March 7, 2006 (the "NPRM"). Currently, the Comments due date is May 30, 2006 and the Reply Comments due date is June 30, 2006.

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**18** See Attachment 1 hereto for a summary of Telesaurus and its affiliates. These Telesaurus LMS-M licenses are for markets with approximately 80% of the nation. These licenses were previously held by Warren C. Havens. Mr. Havens assigned these licenses to Telesaurus earlier this year. Mr. Havens is the majority interest holder in and President of Telesaurus. Telesaurus has affiliates that are also majority owned and managed by Mr. Havens, Telesaurus VPC LLC ("TVL"), Intelligent Transportation & Monitoring Wireless LLC ("ITL"), and AMTS Consortium LLC ("ACL") (the "Telesaurus Affiliates"). Mr. Havens formed and developed TVL, ITL, and ACL in large part to support nationwide development of wide-area Intelligent Transportation System ("ITS") wireless based upon the Telesaurus LMS-M licenses. LMS, with DSRC are the two FCC-designated unique and much needed ITS radio services (47 CFR 90.350).

Telesaurus requests an extended due date for Comments of Monday July 3, 2006 (a one month and one business day extension) and an extended due date for Reply Comments of August 17, 2006 (a two week extension of the Reply period) (the “Request”).

No party with interest would be prejudiced by grant of this Request. By numerous filings in RM-10403, Havens and Telesaurus opposed any NPRM of this nature especially in the clearly premature, speculative conditions that exist, as reflected in the NPRM. The NRPM tracks the Progeny<sup>19</sup> position in this “terminated” RM-10403, even where the Progeny licenses future is up in the air (they are beyond the construction deadline and there has been no decision on the extension request). In any case, Progeny’s position was repeated for years in RM-10403 including in dozens of ex parte meetings up to issuance of the NPRM. Unless and until its licenses are extended, and then unless it has something new to say, Progeny has no basis for asserting a need for speed in this NPRM. The other LMS-M licensees did not put forward before the Commission any serious request for rule changes in RM-10403 or otherwise,<sup>20</sup> nor any evidence that they are doing anything with their LMS-M licenses. They also cannot assert any need for speed in this NPRM. In addition, the Commission clearly saw no need to move at more than glacial speed on the what is now the substance and speculation of the NPRM: these are virtually the same as the Progeny position in RM-10403 that languished for over three years and that was “terminated.” Termination implies lack of merit or ripeness. Thus, while a mystery, the NPRM has provided no basis for any quick action.

Accordingly, since Telesaurus demonstrates below good cause for grant of the Request, since other LMS-M licensees cannot reasonably claim prejudice by such grant, since the NPRM gave no indication of need for prompt action (but suggested otherwise), since Part 15 interests have not requested the NPRM either or otherwise complained about LMS-M,<sup>21</sup> the Request should be granted.

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<sup>19</sup> Progeny LMS LLC (“Progeny”).

<sup>20</sup> Bruce Fox sought an extension of his licenses (which was granted, outside of all Commission precedent) merely based on his asserted inability to do anything in the market regarding LMS-M developments toward construction and operation unless the larger license holders first moved on this. PCS Partners, after buying LMS-M licenses in 2001, requested their return for a refund (which was not granted), and thereafter did not provide any substance in RM-10403 filings as to its plans, due diligence, etc. Helen Wong has been fully silent. There are no other LMS-M geographic licensees. The grandfathered site-based licensees also have been silent, apart from turning back to the Commission for cancellation a number of station licenses in recent years, and applying for certain relocations.

<sup>21</sup> Indeed, few Part 15 equipment vendors and system operators inform their customers and prospects that 902-928 MHz is *not* an unlicensed “commons” band like 2.4 and 5 GHz unlicensed bands and that it will be affected by licensed LMS-M

Telesaurus requests expedited response to the Request, so that, whether granted or not, Telesaurus knows how to proceed with Comments, and so that other parties intending to Comment also know of any new pleading cycle that may result from the Request.

### Summary of Reasons for the Request

Telesaurus has and herein describes reasons for grant of the Request consistent with past Commission grants of similar extension requests for similar reasons, as summarized in Attachment 2 below. The Request is based upon the aggregate of the reasons. In sum:

(1) The LM S-M radio service is especially complex and poses complex solutions,<sup>22</sup> and there is a voluminous record involved in LMS-M (both in RM-10403, upon which the NRPM appears based, and before RM-10403) that must be utilized for Comments in this NPRM proceeding, and additional time is required to do so. Also, there is an even larger, complex record regarding wireless ITS services that also must be properly summarized and referenced in Comments;<sup>23</sup> Location service as required for LMS-M is also complex, and no one seriously involved in such has found any one method by itself, including GPS (or any E911 implementation), as reliable and accurate for wide-area (urban and beyond) continual location of vehicles, persons, and assets. The NPRM did not address any of these, except superficially the last one, yet they must be addressed for any fair

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operations once deployed, and may also be used on priority basis by Federal entities. (E.g., see the public SEC filings of these companies, and their presentations in trade shows, some made public.) This public, sales position undercuts these Part 15 interests “private” complaints to the FCC whenever they believe LMS-M may be seeking relief that will promote its viability and curtail such Part 15 interests ill-conceived spectrum “rights.”

<sup>22</sup> As described below, it is the wide-area ITS radio service. ITS is complex. Also, it is within 902-928 MHz with a hierarchy of spectrum use, which substantially adds technical, regulatory, and other complexities. Further, as noted below, this NPRM is questionable and that adds major complexities to be addressed in the pleading cycles.

<sup>23</sup> LMS (LMS-M, and “LMS-N” or Nonmultilateration LMS) with DSRC are the two FCC-designated unique and much needed ITS radio services (47 CFR 90.350). Inexplicably, the NPRM is devoid of recognition of ITS radio services, as intended by the Commission for LMS and supported by various Federal and private entities involved in ITS nationwide, including Havens, Telesaurus, and their affiliates. Nevertheless, there is no other wireless service, outside of public safety specific wireless, with as high public interest or with more inherent complexity. Telesaurus and Telesaurus Affiliates do not accept the NPRM’s suggestions that ITS radio services should be disregarded, or LMS-M rules changed to allow diversion from ITS radio services

assessment of LMS-M, and to protect Telesaurus's interests in maintaining its and the Commission's ITS focus of LMS-M.

(2) Telesaurus shares staff, facilities, key consultants, and certain core plans with the Telesaurus Affiliates (see footnote 1) and they have been engaged in FCC Auction 65<sup>24</sup> matters, numerous other FCC dockets,<sup>25</sup> and license transfers and acquisitions,<sup>26</sup> for their core business requirements and plans (see Attachment 1 for summary). Telesaurus and Affiliates have also been, in the last two months, and remain engaged with tax and corporate legal counsel in structuring a program whereby they can irrevocably donate and dedicate for permanent use certain major capacity on their nationwide FCC licensed spectrum for US public safety entities, first for emergency use (with portable repeaters and handheld radio caches) and later on the fixed networks using this spectrum. (They have described this intent in many past FCC filings and other public documents for years). This cannot be diverted from without substantial risk and inefficiencies. The critical endeavors noted in this paragraph have, since the NPRM was released, left insufficient time to prepare Comments of the substantial nature that are called for and needed to protect Telesaurus' interests, as outlined herein.

(3) Telesaurus and Telesaurus Affiliates need additional time to complete technical and market studies, with their engineering and other expert consultants, that are important to the complex issues raised in or called for in response to the NPRM, and to the interests of Telesaurus. As noted in item 1 above, these are complex matters.

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<sup>24</sup> The 800 MHz Air-Ground auction. Telesaurus and its Affiliates, as noted above, are engaged in wide-area ITS radio services. Air-ground service to aircraft, as intended by Telesaurus and Affiliates, is one form of ITS radio service. Telesaurus and Affiliates desire to provide multi-modal ITS wireless, to all forms of transportation, land, water, rail, and air.

<sup>25</sup> These involve dozens of Commission proceedings involving AMTS, 220 MHz, VPC, and MAS: licensing filings, some waiver requests, and some restricted proceedings.

<sup>26</sup> Including acquisition by Warren Havens of the 127 220-MHz geographic licenses from the Estate of Net Radio Group to complement the Telesaurus Affiliates' AMTS (217-220 MHz) geographic licenses across the nation (assignment application now pending). This involved various undertakings before the Bankruptcy Court, competitive bidding, and assignment application to the FCC with a fee waiver request. To acquire these licenses, Havens paid sufficient sums to the Trustee to assure that the FCC, a creditor, would be mostly made whole. Also, a Telesaurus affiliate, AMTS Consortium LLC, which acquired a very wide area AMTS license from another party, Thomas Kurian, which has been contested by the party's ex wife, has had to recently prepare a major filing (being filed tomorrow), and before that take related measures to sustain this acquisition.

(4) Telesaurus needs additional time to complete review of the status and future of DSRC, the sister ITS radio service of LMS (see footnote 1) for purposes of Comments.<sup>27</sup> (As noted above and further below, Telesaurus and Affiliates plan to permanently dedicate certain spectrum use rights for public purposes. These include emergency wireless, core (most needed for public safety) ITS and including integration with core DRCS, and environmental monitoring.)

(5) Telesaurus needs to address in Comments its procedural and other legal objections to the NPRM as partially noted below. This will take additional legal advice and time.

(6) As noted above, Telesaurus recently obtained the LMS-M licenses formerly held by Warren Havens. Telesaurus needs additional time to coordinate its Comments and then Reply Comments with its interest holders, that include parties other than Havens, its Affiliates, and its potential new backers including its Affiliates.

(7) The NPRM was unexpected, as its own language suggests, by “terminating” the stale RM-10403 (then reincarnated in the NPRM no one asked for). Thus, prior to release of the NPRM, Telesaurus had not prepared for such a matter. Instead Telesaurus and its Affiliates had fully engaged their staff, consultants, and resources on positive developments for their licenses and plans as outlined herein. Shifting resources into this NPRM matter, and adjusting the other programs so affected, also takes time, and adds to the need for this Request.

#### Further Discussion of Reasons

A. LMS-M, as the wide-area ITS radio service in the United States,<sup>28</sup> has a unique, highly valuable, practical, and bright future that no other radio service is designed to or intending to focus on. Telesaurus is making excellent progress in all of the elements needed, including technology and equipment, drawing from major international developments in ITS and ITS wireless, including certain ITS-focused

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<sup>27</sup> Appropriate LMS-M, that retains all technical parameters of the current rules, combined with DRSC will provide major advantages for most all of the ITS radio service solutions identified by the Commission, US DOT, and the ITS industry. Havens and Telesaurus have been involved in DSRC since the first stakeholder meeting in DC conducted by ITS America and US DOT FHA. Among other matters, Telesaurus need to confirm and update its past determinations regarding integration of wide-area wireless and DSRC, and that LMS-M may be unique among wide-area wireless in the developed nations in terms of a radio service dedicated for wide-area ITS, and other related matters.

<sup>28</sup> See 47 CFR §90.350 and the extensive past rulemaking Orders in LMS-M, as well as the discussion of LMS-M in the rulemaking Orders concerning the other ITS radio service, DSRC.

3G and 4G modulation, SDR, IP core, Telematics, multi-mode location technology,<sup>29</sup> and utilization of vehicles' orders-of-magnitude better platform for wireless than handheld radios (which is the prevailing dominant paradigm for advanced wireless).

Wide-area location-based ITS wireless should also be integrated with short-range ITS wireless, namely DSRC (and in some cases, certain 5.9 GHz public safety wireless). This is entirely feasible if planned appropriately, and politically practical as long and only as long as LMS-M remains dedicated to such ITS radio service under Commission rules and licensee commitment.<sup>30</sup> These developments, as part of the much broader ITS development, are taking place worldwide in the needed timeframes. Components include various interrelated wireless location and communication technology and equipment, onboard land vehicle Telematics equipment (and similar equipment for maritime, rail, and air transport vehicles), service software, international standards, interfaces with public safety and highway authority organizations, and many public-agency and private companies cooperative developments involved in regional, nationwide multi-modal ITS. Such ITS

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<sup>29</sup> The Progeny position in RM-10403 and the similar NPRM's treatment of wireless location technology and service lack depth and practical meaning. Wireless location, still in its infancy, is specific to defined services. E911 is not close to the same service as fleet location or location of assets in a warehouse, or kids in an amusement park. In any case, LMS-M is meant for ITS specific location and related communication, and these involve particular forms of ongoing location of vehicles and assets in transport for critical purposes, from safety of life, to efficient traffic flows, to "Homeland Security" functions. No one location method is sufficient for an acceptable level of service for any major or mission-critical ITS wireless system. For example, it is well known and accepted that GPS has substantial errors, can be easily jammed and spoofed (tricked) even by simple easy-to-make devices (plans are on Internet), and is blocked in urban canyons and other situations. Terrestrial location (mostly, forms of "multilateration") is needed to augment GPS both to increase accuracy and to reduce chances of deliberate disablement of GSP. Other forms of location are also needed for the level of service planned for in ITS circles, including onboard inertial guidance, so that location even inside tunnels and buildings will continue. Further, increasingly location will be done on WLANS, and WLANS will be in homes, workplaces, and most visited public places. Thus, WLAN location and WWAN location must be integrated, and at least planned for. In sum, the suggestion in the NPRM, echoing that of Progeny in RM-10403, that terrestrial multilateration is no longer viable or needed, as if GPS and E911 solved the location problem, is ignorant and in error, especially when expressed in the context of mission-critical ITS wireless.

<sup>30</sup> Telesaurus and its Affiliates will be pursuing this on a partly non-profit and not-for-profit basis, and they have stated for years in various FCC filings and other public releases. This will assume perpetual dedication of spectrum for wide-area ITS radio service for core ITS applications most central to public safety and pollution reduction, and for environmental monitoring.

development will result in increasingly safe and efficient flow of land transportation, and also other modes of transportation, of persons and assets.

As the Commission wrote in LMS-M rulemaking, and as has been amplified in the ITS community worldwide, this is essential for (in the US alone) saving tens and thousand of lives a year, saving billions of dollars in lost workplace productivity resulting from traffic congestion, greatly curbing pollution, fulfilling or advancing core “Homeland Security” objectives (including enhanced highway flow management and relocation, and victim assistance, in major urban emergencies; enhanced tracking and security of container shipments within the US; and better spotting and tracking of suspects in major crises) and other high public interest goals.

The NPRM missed the above, as if LMS-M was (as Progeny wrongly asserted) a hopeless or “obviated” idea [31](#) Apart from core public safety wireless, or even considering it,[32](#) the ITS radio services are as important and needed as any

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[31](#) The NPRM and Progeny (in RM-10403) completely miss this, and diverge into speculation on what “flexible” things someone may, someday, in some unexplained way, do with the LMS-M spectrum and how that may put a crimp into the rights that don’t exist under law of unlicensed users and equipment sellers. This is all speculation, especially how such an undefined LMS-M may interact with indefinable Part 15. It cannot be determined apart from a full set of assumptions on both sides, complex computer modeling, and even then only actual tests will show much of value to rely upon. Even there, Part 15 use cannot be reliably determined—it is unlicensed, and there is no record of where the radios are being used. Only some Part 15 systems can be determined, if the system operators want to cooperate and do so honestly and objectively with full disclosure. That is far from certain, and not suggested in the record of LMS-M rulemaking to date. Part 15 use is for local purposes (or light use for longer range point-to-point, or point-to-multipoint) as the Commission often stated in the LMS rulemaking Orders. Proper LMS-M under Commission rules and intent focuses the spectrum on long-range links to vehicles on road, that is generally away from local use by Part 15 devices. For this, its power and time of use cannot be reduced, nor would reduction help Part 15, since that would cause shorter spacing of LMS-M network sites, likely resulting in generally more, not less, average power in the local areas of Part 15 use. Progeny and the NPRM are speculating on problems that don’t exist now and do not have to arise. But the time to deal with them in any major Commission relief effort is after due diligence and proof of a problem and proposals for practical solutions.

[32](#) Considering that the diverse public safety community does not have a history or structure to very effectively “interoperate” in wireless and other matters, radio services like LMS-M that in large part can fulfill goals of public safety entities in the US, some directly and many other indirectly, have increased importance as major augmenters to public-safety specific wireless. LMS-M licensees can, being private and nationwide (Telesaurus and Affiliates), can develop more quickly and

that the FCC has created and maintain. That ITS is a major international development that takes a lot of work and time (including the wireless components) and that FCC staff apparently have not (since the early LMS-M days) kept up on it, do no diminish this importance.

Telesaurus needs additional time to summarize these unique and important aspects of ITS wireless that LMS-M can fulfill and present them in this proceeding, especially where the NPRM was devoid of any mention of ITS radio service, the goal of LMS-M.

B. Broad regulatory “flexibility” as intended for general commercial radio services is inappropriate for radio services designed and licensed for specific high-public-interest purposes. These include not only services by public agencies, but also services by the commercial sector for high public interest purposes. LMS-M is unique, or among the special radio services, in that, while being licensed to private entities, it was designed and licensed for such high-public-interest purposes, namely, wide-area ITS location and communication systems. As the FCC Spectrum Task Force Report, November 2002, discussed, such high-public-interest purposes should be subject to Commission’s maintenance of rules and standards to secure and protect the purposes.<sup>33</sup> In LMS-M rulemaking, the Commission first defined and discussed its high public interest, ITS purposes. Then it decided to allow licensees to charge subscribers (any entity, including public agencies) to seek commercial profit, noting that allowing this should support pursuit of these high public interest goals. In other words, in LMS-M, the Commission appropriately set the ITS radio service goals, then decided that as a means to achieve these, it adopted “commercial” licensing for profit: thus, the LMS-M auctions. The NPRM is contrary to these appropriate Commission and Task Force priorities and goals.

Telesaurus needs additional time to properly present the matters, along with the other matters described herein.

C. In addition, the Telesaurus’ plan for its competitive nationwide LMS-M service is unique due to the Telesaurus Affiliates’ complementary nationwide FCC licensed spectrum in other bands, including the majority of the AMTS 217-220 MHz

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over a wider area than particular public safety organizations. Telesaurus has plans for this in conjunction with certain Federal entities and NTIA OSM.

<sup>33</sup> The Commission did not allocate LMS-M as another available or freed-up band for whatever the commercial market may want to pursue. There are plenty that have been allocated and auctions, and more on the way. Corporations and unregulated commerce, and their generally short-range vision, and their wild market swings, cannot be relied for core public purposes

band nationwide (see Attachment 1).<sup>34</sup> This additional spectrum will allow far more cost effective wide-area ITS wireless than by use of LMS-M spectrum alone.

Telesaurus needs additional time to present these capabilities and benefits, and why the NPRM's suggested changes will seriously damage them.

D. NPRM procedural and legality issues: Under LMS-M rules, including 47 CFR 90.350 (f), and associated Order decisions (as in part noted in the NPRM), the Commission decided that there must be at least two competing LMS-M licensed services in each licensed area.<sup>35</sup> Under this rule, the A-block LMS-M licensee must be one of the competitors. Telesaurus, as Holder of the vast majority of the A-block LMS, thus stand as one of the LMS competitors in most of the nation. Telesaurus thus has a major stake in this NPRM, and no other entity can speak for it, since it is an independent entity from all other LMS licensees, and under FCC rules it must be a separate competitor. As the Bureau staff that put out this NPRM surely understand, Telesaurus could not have more loudly and clearly opposed the suggestions made in the NPRM and the idea of any broad LMS-M NPRM on such premature, speculative basis.

While the NPRM referenced the "Progeny" RM-10403 proceeding, the Bureau "terminated" that proceeding with no comment. Further, the Progeny LMS-M licenses' construction deadline has long since past, without construction, and it is

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<sup>34</sup> Telesaurus and Affiliates have succeeded in their plans first described to the FCC and the wireless industry in 2000 to obtain 900 and 200 MHz in the majority of the nation for the purposes outlined herein. This has involved seven FCC spectrum auctions, as well as major post-auction acquisitions, that continue. They now hold 6 MHz of 900 MHz LMS-M (and several hundred complementary 900 MHz MAS geographic licenses), and 1-3 MHz of 200 MHz AMTS and 220 MHz. They hold this 900 and 200 MHz each in approximately 80% of the nation. Generally, where their geographic AMTS spectrum is encumbered by alleged site-based AMTS stations, they hold (unencumbered) LMS-M. The LMS-M will be used primarily in urban areas, and the AMTS primarily in rural areas where less spectrum but lower, longer-range propagation is highly valuable for Cap Ex and Op Ex savings, and for speed to deploy. The two bands are also better for the major emergency wireless services that Telesaurus and its Affiliates plan, noted herein.

<sup>35</sup> Contrary to suggestions in the NPRM, this was not related simply to provision of general location service; it was based on the Commission intention of LMS-M providing a complex array of ITS wide-area radio services, a unique radio service being developed worldwide. These are not the same as general mobile location service. The NPRM, as well as the Progeny position in the "terminated" yet effectively adopted RM-10403, is devoid of any understanding of ITS and ITS radio services, including the sort of continual location functions involved.

not clear whether the Progeny licenses will be extended.<sup>36</sup> However, after such termination, the NPRM essentially adopted the Progeny position in RM-10403, and fully ignored the clear position of Havens (now Telesaurus) in RM-10403, which was presented upon invitation of the Bureau when opening RM-10403. Telesaurus does not believe this process complied with due process including under the Administrative Procedures Act and Commission Rules. For this reason and others noted herein, Telesaurus must question the intent of the Bureau in said termination.<sup>37</sup>

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<sup>36</sup> The Progeny extension request is contested by Telesaurus and Havens, including on the basis that Progeny did not demonstrate any due diligence (under Commission precedent) to attempt to meet the construction requirement nor to even conceive of the core LMS-M “multilateration” requirement in its alleged but undocumented periodic phone surveys of equipment vendors. It is questionable how the Bureau possibly saw fit in the NPRM to base its suggestions squarely upon the Progeny position in the “terminated” RM-10403 (including years, dozens, of Progeny ex parte presentations not properly disclosed) unless the NPRM was created to support an extension of the Progeny licenses, which would be improper. Further objectionable is that this NPRM entirely avoid both the ITS purpose and history of LMS rulemaking, and the strongly opposing position in RM-10403 by Havens and Telesaurus whose LMS licenses remained viable, who supported the Commission’s intent for ITS radio service, and who were and are in fact diligently pursuing it.

<sup>37</sup> The NPRM is alarming to Telesaurus, as it is both procedurally and substantively highly objectionable, damaging, unfair, and anticompetitive. As proposed, Telesaurus believes the NPRM’s suggested changes would be unconstitutional taking, including the major reduction in power and time of use. (FCC Licenses are intangible property consisting of the rights under them, including the core technical allowances and protections from other, secondary users: Cutting these back is taking of property, and the NPRM provides no hint of why such taking is needed for any public interest purpose.) As Havens and Telesaurus stated in filings in RM-10403, they believe (i) any LMS-M NPRM based on the Progeny ideas (unnecessary “flexibility” in exchange for damaging loss of core technical parameters) will be highly damaging to the LMS-M service and ITS in the US it is meant to serve, (ii) any NPRM, or licensee specific relief, that is not founded on a clear presentation by LMS-M licensees of their plans, technology, field trials, interaction with Part 15, protection of Federal priority rights, and other basic definitions and demonstrations, is a speculative waste of time, and will divert efforts and stunt progress toward viable LMS-M., (iii) such NPRM will also result in numerous wasteful filings and ex parte meetings by Part 15 interests based on their ill-perceived “right” to the spectrum and the lack, as just noted, of sufficient LMS-M details for any party to do more than superficially cheer or complain about, and (iv) LMS-M is competitive: the spectrum-cap rules require this. It is entirely inappropriate for one competitor (Progeny) and its apparent Bureau supporters, to force a rule-change proceeding on the other major competitor, Telesaurus. Progeny can seek whatever relief it needs for its own concept of LMS-M under rule waivers,

Telesaurus needs additional time to properly address these procedural and other legal problems with the NPRM.

[Execution on next page.]

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if it has any basis for it, and if its licenses are extended based on its performance prior to its license deadline and apart from the much later NPRM.

Conclusion

For the above reasons, this Request to extend the pleading cycle should be promptly granted. Telesaurus request that the Bureau inform Telesaurus by email of its decision, to the two emails listed below.

Respectfully,

*[Electronically submitted. Signature on file.]*

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May 23, 2006

**Internal Revenue Service  
Technical Advice Memorandum 200035005**

**Internal Revenue Service  
Technical Advice Memorandum 2000-35005**

**PRIVATE RULING - TAM 200035005**

**INTERNAL REVENUE SERVICE  
NATIONAL OFFICE TECHNICAL ADVICE MEMORANDUM**

1031.02-00

PLR 200035005

DATE: May 11, 2000

Release Date: 9/1/2000

**INTERNAL REVENUE SERVICE  
NATIONAL OFFICE TECHNICAL ADVICE MEMORANDUM**

[1] Whether the exchange of Federal Communications Commission (FCC) radio broadcast station licenses (radio licenses) for an FCC television broadcast station license (television license) is a like kind [property] exchange subject to the non-recognition rules under section 1031 of the Internal Revenue Code.

**CONCLUSION**

[2] The exchange of FCC radio licenses for an FCC television [\*3] license is a like kind [property] exchange under section 1031.

**FACTS**

[3] Taxpayer is the parent company of an affiliated group that files a consolidated return on a 52-53 week taxable year. X, a subsidiary that was a member of Taxpayer's consolidated group, entered into an asset exchange agreement on Date 1, with Y. Y was subsequently acquired by a consolidated group with Z as the parent company. Pursuant to the agreement, on Date 2, X transferred to Y radio station A in City P, radio station B in City Q, and radio station C in City R, and acquired from Y television station D in City S.

[4] Taxpayer reported for financial reporting purposes that the television station acquired in the exchange had a fair market value of h, while the radio stations surrendered in the exchange had a basis of i. Taxpayer, therefore, reported a pre-tax, non-cash, non-operating gain of i for financial reporting purposes. The FCC licenses represented the largest portion of the exchange with the FCC radio licenses valued at k and the FCC television license valued at l. /1/

[5] For federal income tax purposes, Taxpayer treated the exchange of FCC radio licenses for the FCC television license [\*4] as an exchange of like kind property under section 1031(a). Taxpayer on its consolidated return reported a gain of approximately m on the exchange, the difference between the reported values of the FCC radio licenses surrendered in the exchange and the FCC television license received in the exchange.

\* \* \* \*

[7] The Communications Act of 1934 (the "Communications Act") grants the FCC the power to license "radio stations." [\*5] 47 U.S.C. section 303(a) (1995 & 1999 Supp.). Under this grant of authority, the FCC licenses both radio and television broadcasting. FCC regulations define "radio station" as "[a] separate transmitter or group of transmitters under simultaneous common control, including the necessary equipment required for carrying on a radio communications service." 47 C.F.R. section 1,907. FCC regulations define "radio communication" to mean "[t]elecommunication by means of radio waves," which applies to both radio and television broadcasting. 47 C.F.R. section 2.1. Thus, both radio and television are transmitted over the electromagnetic spectrum by radio transmitting equipment. The Communications Act further grants the FCC the power to "assign frequencies for each individual station and determine the power which each station shall use and the time during which it may operate." 47 U.S.C. section 303(c) (1995 & 1999 Supp.).

\* \* \* \*

[10] The rights conferred upon holders of FCC licenses (both radio and television) are described in the FCC licenses themselves. Each of the licenses submitted by Taxpayer expressly states that "the licensee is hereby authorized to use and operate the radio transmitting apparatus herein described." More specifically, each of the FCC licenses confers a right to use the radio transmitting apparatus to broadcast on a designated channel and frequency range, at designated hours of operation, at designated geographic locations, at a maximum [\*7] effective radiated power, and using antenna with certain antenna system specifications.

[11] Section 301 of the Communication Act confirms that the licenses themselves confer the rights held by licensees. Section 301 provides:

It is the purpose of this chapter, among other things, to maintain control of the United States over all the channels of radio transmission, and to provide for the use of such channels, but not the ownership thereof, by persons for limited periods of

time, under licenses granted by Federal authority, and NO SUCH LICENSES SHALL BE CONSTRUED TO CREATE ANY RIGHT, BEYOND THE TERMS, CONDITIONS, AND PERIODS OF THE LICENSE. 47 U.S.C. section 301 (1995 & 1999 Supp.) (emphasis added).

The FCC licenses (both radio and television licenses) submitted by Taxpayer reflect the mandate of section 301 in the following language:

This license shall not vest in the licensee any right to operate the station nor any right in the use of the frequency designated in the license beyond the term hereof, nor in any other manner than authorized herein.

Thus, the FCC licenses themselves contain the rights to use radio transmitting [\*8] apparatus to broadcast programming (whether radio or television) over a portion of the electromagnetic spectrum at a certain power in a designated geographic area.

## LAW AND ANALYSIS

[12] Section 1031(a)(1) provides generally that no gain or loss shall be recognized on the exchange of property held for productive use in a trade or business or for investment if such property is exchanged solely for property of like kind which is to be held either for productive use in a trade or business or for investment. See also section 1.1031(a)-1(a) of the Income Tax Regulations.

[13] Section 1.1031(a)-1(b) provides that "like kind" refers to the nature or character of the property and not to its grade or quality. One kind or class of property may not, under section 1031, be exchanged for property of a different kind or class. See also section 1.1031(a)-2(a).

\* \* \* \*

[16] In the instant case, the FCC radio licenses and the FCC television license are intangible personal property. Thus, the determination of whether they are like kind depends on (1) the nature or character of the rights involved; and (2) the nature or character of the underlying property to which the intangible personal property relates.

## THE NATURE OR CHARACTER OF THE RIGHTS INVOLVED

\* \* \* \*

[20] An examination of the FCC licenses at issue reveals that each of the FCC licenses confers a right to use the referenced radio transmitting apparatus to broadcast on a designated channel and frequency range, at designated hours of operation, at designated geographic locations, at a maximum effective radiated power, and using antenna with certain antenna system specifications. This right is specifically enumerated in each FCC license, regardless of whether the license relates to a television station, an FM radio station, or an AM radio station. Other

than the different labels, the only differences between the various FCC licenses are the specific operating parameters (such as frequency, operating hours, power, and antenna information) and geographic location. These differences do not change the nature or character of the rights granted in the licenses, but are merely differences in grade or quality.

#### THE NATURE OR CHARACTER OF THE UNDERLYING PROPERTY

\* \* \* \*

[25] . . . Thus, we agree with Taxpayer's argument that the appropriate manner of identifying the underlying property is to look to the licenses themselves. However, we disagree that the radio transmitting apparatus described in the licenses should be considered the underlying property. Although the licenses specifically authorize Taxpayer to "use and operate the radio transmitting apparatus herein described," we think the license principally relates to the use of the radio transmitting apparatus, rather than the apparatus itself. An FCC license does not authorize the licensee to own or possess radio transmitting apparatus; the licensee would not need an FCC license for the apparatus unless it wanted to use that apparatus to broadcast over the electromagnetic spectrum. The FCC has the specific power to "assign frequencies for each individual station and determine the power which each [\*17] station shall use and the time during which it may operate." 47 U.S.C. section 303(c) (1995 & 1999 Supp.). An FCC license reflects the FCC's decision to assign a specific frequency of the electromagnetic spectrum to a particular licensee in a given broadcast area. Thus, although an FCC license clearly regulates the manner in which the licensee may use its radio transmitting equipment, we think that the assigned frequency of the electromagnetic spectrum referred to in each license is the underlying property to which the license relates.

Exhibit 6

Power allowance limits for selected established “flexible” commercial radio services.

Compare to (1) current LMS-M allowance limit of 30 Watts ERP in the broadband blocks, and 300 W EPR in the upper, narrowband blocks (next to high power paging), and (2) the even further reduced power suggested in the NPRM.

LMS-M, under current rules and Commission intent, needs to be designed and deployed for high-speed vehicular service where power (per carrier whether narrow or wide, and per MHz) is far more needed than in services designed to serve small handheld devices with small cell sizes.

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1. Broadband PCS

Sec. [24.232](#) Power and antenna height limits.

(a) Base stations are limited to 1640 watts peak equivalent isotropically radiated power (EIRP) with an antenna height up to 300 meters HAAT, except as described in paragraph (b) below. See Sec. [24.53](#) for HAAT calculation method. Base station antenna heights may exceed 300 meters with a corresponding reduction in power; see Table 1 of this section. The service area boundary limit and microwave protection criteria specified in Sec. [24.236](#) and [24.237](#) apply.

Table 1. Reduced Power for Base Station Antenna Heights Over 300 Meters

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HAAT in meters	Maximum EIRP watts
[le] 300.....	1640
[le] 500.....	1070
[le] 1000.....	490
[le] 1500.....	270
[le] 2000.....	160

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(b) Base stations that are located in counties with population densities of 100 persons or fewer per square mile, based upon the most recently available population statistics from the Bureau of the Census, are limited to 3280 watts peak equivalent isotropically radiated power (EIRP) with an antenna height up to 300 meters HAAT; See Sec. [24.53](#) for HAAT calculation method. Base station antenna heights may exceed 300 meters with a corresponding reduction in power; see Table 2 of this section. The service area boundary limit and

microwave protection criteria specified in Sec. Sec. [24.236](#) and [24.237](#) apply. Operation under this paragraph must be coordinated in advance with all PCS licensees within 120 kilometers (75 miles) of the base station and is limited to base stations located more than 120 kilometers (75 miles) from the Canadian border and more than 75 kilometers (45 miles) from the Mexican border.

Table 2.\_Reduced Power for Base Station Antenna Heights Over 300 Meters

HAAT in meters	Maximum EIRP watts
[le] 300.....	3280
[le] 500.....	2140
[le] 1000.....	980
[le] 1500.....	540
[le] 2000.....	320

(c) Mobile/portable stations are limited to 2 watts EIRP peak power and the equipment must employ means to limit the power to the minimum necessary for successful communications.

(d) Peak transmit power must be measured over any interval of continuous transmission using instrumentation calibrated in terms of an rms-equivalent voltage. The measurement results shall be properly adjusted for any instrument limitations, such as detector response times, limited resolution bandwidth capability when compared to the emission bandwidth, sensitivity, etc., so as to obtain a true peak measurement for the emission in question over the full bandwidth of the channel.

[ [70 FR 61059](#) , Oct. 20, 2005]

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Following is from the Power Spectral Density Docket: *Report and Order and Further Notice of Proposed Rulemaking*, FCC 05-144, released 8/9/05, ¶19.

19. Discussion. After consideration of the record and the general experience with the PCS and other new wireless services, we conclude that the current base station transmitter output power limits should be relaxed to afford more flexibility and achieve harmonization among wireless radio services and competing technologies. The record demonstrates that the transmitter output power limit has had an undesirable effect in hindering the use of MCPAs. MCPAs may be a cost effective way to construct base stations, and we wish to allow licensees flexibility in their use. In view of these conclusions and our policy to eliminate unnecessary,

counterproductive or ineffective rules, we are amending Sections 24.232(a)-(b) to eliminate the 100-watt and 200-watt base station transmitter output power limits for urban and rural systems, respectively.[FN63] As discussed, we believe that the remaining rule that limits maximum EIRP is sufficient to serve our legitimate regulatory purposes for the time being.[FN64] We note that, in view of our elimination of the broadband PCS base station transmitter output power limit rule, there is no need to address the “per transmitter” vs. “per carrier” aspect with regard to base station transmitter output power.

## 2. Cellular

Sec. [22.913](#) Effective radiated power limits.

The effective radiated power (ERP) of transmitters in the Cellular Radiotelephone Service must not exceed the limits in this section.

(a) Maximum ERP. In general, the effective radiated power (ERP) of base transmitters and cellular repeaters must not exceed 500 Watts. However, for those systems operating in areas more than 72 km (45 miles) from international borders that:

(1) Are located in counties with population densities of 100 persons or fewer per square mile, based upon the most recently available population statistics from the Bureau of the Census; or,

(2) Extend coverage on a secondary basis into cellular unserved areas, as those areas are defined in Sec. [22.949](#), the ERP of base transmitters and cellular repeaters of such systems must not exceed 1000 Watts. The ERP of mobile transmitters and auxiliary test transmitters must not exceed 7 Watts.

(b) Height-power limit. The ERP of base transmitters must not exceed the amount that would result in an average distance to the service area boundary of 79.1 kilometers (49 miles) for cellular systems authorized to serve the Gulf of Mexico MSA and [40.2](#) kilometers (25 miles) for all other cellular systems. The average distance to the service area boundary is calculated by taking the arithmetic mean of the distances determined using the procedures specified in Sec. [22.911](#) for the eight cardinal radial directions.

(c) Coordination exemption. Licensees need not comply with the height-power limit in paragraph (b) of this section if the proposed operation is coordinated with the licensees of all affected cellular systems on the same channel block within 121 kilometers (75 miles) and concurrence is obtained.

[ [59 FR 59507](#) , Nov. 17, 1994, as amended at [69 FR 75171](#) , Dec. 15, 2004]

3. 700MHz, WCS, AWS, 1.4GHz, etc.

Sec. 27.50 Power and antenna height limits.

(a) The following power limits apply to the 2305-2320 MHz and 2345-2360 MHz bands:

(1) Fixed, land, and radiolocation land stations transmitting are limited to 2000 watts peak equivalent isotropically radiated power (EIRP).

(2) Mobile and radiolocation mobile stations transmitting are limited to 20 watts EIRP peak power.

(b) The following power and antenna height limits apply to transmitters operating in the 746-764 MHz and 776-794 MHz bands:

(1) Fixed and base stations transmitting in the 746-764 MHz band and the 777-792 MHz band must not exceed an effective radiated power (ERP) of 1000 watts and an antenna height of 305 m height above average terrain (HAAT), except that antenna heights greater than 305 m HAAT are permitted if power levels are reduced below 1000 watts ERP in accordance with Table 1 of this section;

(2) Control stations and mobile stations transmitting in the 747-762 MHz band and the 776-794 MHz band and fixed stations transmitting in the 776-777 MHz band and the 792-794 MHz band are limited to 30 watts ERP;

(3) Portable stations (hand-held devices) transmitting in the 747-762 MHz band and the 776-794 MHz band are limited to 3 watts ERP;

(4) Maximum composite transmit power shall be measured over any interval of continuous transmission using instrumentation calibrated in terms of RMS-equivalent voltage. The measurement results shall be properly adjusted for any instrument limitations, such as detector response times, limited resolution bandwidth capability when compared to the emission bandwidth, etc., so as to obtain a true maximum composite measurement for the emission in question over the full bandwidth of the channel.

(c) The following power and antenna height requirements apply to stations transmitting in the 698-746 MHz band:

(1) Fixed and base stations are limited to a maximum effective radiated power (ERP) of 50 kW, with the limitation on antenna heights as follows:

(i) Fixed and base stations with an ERP of 1000 watts or less must not

exceed an antenna height of 305 m height above average terrain (HAAT) except when the power is reduced in accordance with Table 1 of this section;

(ii) The antenna height for fixed and base stations with an ERP greater than 1000 watts but not exceeding 50 kW is limited only to the extent required to satisfy the requirements of Sec. [27.55\(b\)](#).

(2) Control and mobile stations are limited to 30 watts ERP.

(3) Portable stations (hand-held devices) are limited to 3 watts ERP.

(4) Maximum composite transmit power shall be measured over any interval of continuous transmission using instrumentation calibrated in terms of RMS-equivalent voltage. The measurement results shall be properly adjusted for any instrument limitations, such as detector response times, limited resolution bandwidth capability when compared to the emission bandwidth, etc., so as to obtain a true maximum composite measurement for the emission in question over the full bandwidth of the channel.

(5) Licensees intending to operate a base or fixed station at a power level greater than 1 kW ERP must provide advanced notice of such operation to the Commission and to licensees authorized in their area of operation. Licensees that must be notified are all licensees authorized under this part to operate a base or fixed station on an adjacent spectrum block at a location within 75 km of the base or fixed station operating at a power level greater than 1 kW ERP. Notices must provide the location and operating parameters of the base or fixed station operating at a power level greater than 1 kW ERP, including the station's ERP, antenna coordinates, antenna height above ground, and vertical antenna pattern, and such notices must be provided at least 90 days prior to the commencement of station operation.

(d) The following power and antenna height requirements apply to stations transmitting in the 1710-1755 MHz and 2110-2155 MHz bands:

(1) The power of each fixed or base station transmitting in the 2110-2155 MHz band and located in any county with population density of 100 or fewer persons per square mile, based upon the most recently available population statistics from the Bureau of the Census, is limited to a peak equivalent isotropically radiated power (EIRP) of 3280 watts and a peak transmitter output power of 200 watts. The power of each fixed or base station transmitting in the 2110-2155 MHz band from any other location is limited to a peak EIRP of 1640 watts and a peak transmitter output power of 100 watts. A licensee operating a base or fixed station utilizing a power of more than 1640 watts EIRP must coordinate such operations in advance with all Government and non-Government satellite entities in the 2025-2110 MHz band. Operations above 1640 watts EIRP must also be coordinated in advance with

the following licensees within 120 kilometers (75 miles) of the base or fixed station: all Multipoint Distribution Service (MDS) licensees authorized under Part 21 in the 2155-2160 MHz band and all AWS licensees in the 2110-2155 MHz band.

(2) Fixed, mobile, and portable (hand-held) stations operating in the 1710-1755 MHz band are limited to a peak EIRP of 1 watt. Fixed stations operating in this band are limited to a maximum antenna height of 10 meters above ground, and mobile and portable stations must employ a means for limiting power to the minimum necessary for successful communications.

(e) The following power limits apply to the paired 1392-1395 MHz and 1432-1435 MHz bands as well as the unpaired 1390-1392 MHz band (1.4 GHz band):

(1) Fixed stations transmitting in the 1390-1392 MHz and 1432-1435 MHz bands are limited to 2000 watts EIRP peak power. Fixed stations transmitting in the 1392-1395 MHz band are limited to 100 watts EIRP peak power.

(2) Mobile stations transmitting in the 1390-1392 MHz and 1432-1435 MHz bands are limited to 4 watts EIRP peak power. Mobile stations transmitting in the 1392-1395 MHz band are limited to 1 watt EIRP peak power.

(f) The following power limits apply to the 1670-1675 MHz band:

(1) Fixed and base stations are limited to 2000 watts EIRP peak power.

(2) Mobile stations are limited to 4 watts EIRP peak power.

(g) [Reserved]

(h) The following power limits shall apply in the BRS and EBS:

(1) Main, booster and base stations.

(i) The maximum EIRP of a main, booster or base station shall not exceed  $33 \text{ dBW} + 10 \log(X/Y) \text{ dBW}$ , where X is the actual channel width in MHz and Y is either 6 MHz if prior to transition or the station is in the MBS following transition or 5.5 MHz if the station is in the LBS and UBS following transition, except as provided in paragraph (h)(1)(ii) of this section.

(ii) If a main or booster station sectorizes or otherwise uses one or more transmitting antennas with a non-omnidirectional horizontal plane radiation pattern, the maximum EIRP in dBW in a given direction shall be determined by the following formula:  $\text{EIRP} = 33 \text{ dBW} + 10 \log(X/Y) \text{ dBW} + 10 \log(360/\text{beamwidth}) \text{ dBW}$ , where X is the actual channel width in MHz, Y is

either (i) 6 MHz if prior to transition or the station is in the MBS following transition or (ii) 5.5 MHz if the station is in the LBS and UBS following transition, and beamwidth is the total horizontal plane beamwidth of the individual transmitting antenna for the station or any sector measured at the half-power points.

(2) Mobile and other user stations. Mobile stations are limited to 2.0 watts EIRP. All user stations are limited to 2.0 watts transmitter output power.

(3) For television transmission, the peak power of the accompanying aural signal must not exceed 10 percent of the peak visual power of the transmitter. The Commission may order a reduction in aural signal power to diminish the potential for harmful interference.

(4) For main, booster and response stations utilizing digital emissions with non-uniform power spectral density (e.g. unfiltered QPSK), the power measured within any 100 kHz resolution bandwidth within the 6 MHz channel occupied by the non-uniform emission cannot exceed the power permitted within any 100 kHz resolution bandwidth within the 6 MHz channel if it were occupied by an emission with uniform power spectral density, i.e., if the maximum permissible power of a station utilizing a perfectly uniform power spectral density across a 6 MHz channel were 2000 watts EIRP, this would result in a maximum permissible power flux density for the station of  $2000/60 = 33.3$  watts EIRP per 100 kHz bandwidth. If a non-uniform emission were substituted at the station, station power would still be limited to a maximum of 33.3 watts EIRP within any 100 kHz segment of the 6 MHz channel, irrespective of the fact that this would result in a total 6 MHz channel power of less than 2000 watts EIRP.

(i) Peak transmit power shall be measured over any interval of continuous transmission using instrumentation calibrated in terms of rms-equivalent voltage. The measurement results shall be properly adjusted for any instrument limitations, such as detector response times, limited resolution bandwidth capability when compared to the emission bandwidth, etc., so as to obtain a true peak measurement for the emission in question over the full bandwidth of the channel.

Table 1\_Permissible Power and Antenna Heights for Base and Fixed Stations in the 698-764 MHz and 777-792 MHz Bands

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	Effective radiated power	
Antenna height (AAT) in meters (feet)	(ERP)	
	(watts)	

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Above 1372 (4500).....	65
Above 1220 (4000) To 1372 (4500).....	70
Above 1067 (3500) To 1220 (4000).....	75
Above 915 (3000) To 1067 (4000).....	100
Above 763 (2500) To 915 (3000).....	140
Above 610 (2000) To 763 (2500).....	200
Above 458 (1500) To 610 (2000).....	350
Above 305 (1000) To 458 (1500).....	600
Up to 305 (1000).....	1000
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[ [62 FR 16497](#) , Apr. 7, 1997, as amended at [65 FR 3147](#) , Jan. 20, 2000; [65 FR 17602](#) , Apr. 4, 2000; [65 FR 42882](#) , July 12, 2000; [65 FR 57267](#) , Sept. 21, 2000; [67 FR 5511](#) , Feb. 6, 2002; [67 FR 41855](#) , June 20, 2002; [69 FR 5715](#) , Feb. 6, 2004; [69 FR 72033](#) , Dec. 10, 2004; [69 FR 75172](#) , Dec. 15, 2004; [69 FR 77950](#) , Dec. 29, 2004; [70 FR 1190](#) , Jan. 6, 2005]

4. 800MHz and 900MHz Services (Subpart S)

Sec. 90.635 Limitations on power and antenna height.

(a) The effective radiated power and antenna height for base stations may not exceed 1 kilowatt (30 dBw) and 304 m. (1,000 ft.) above average terrain (AAT), respectively, or the equivalent thereof as determined from the Table. These are maximum values, and applicants will be required to justify power levels and antenna heights requested.

(b) The maximum output power of the transmitter for mobile stations is 100 watts (20 dBw).

Table. Equivalent Power and Antenna Heights for Base Stations in the 851-869 MHz and 935-940 MHz Bands Which Have a Requirement for a 32 km (20 mi) Service Area Radius

Antenna height (ATT) meters (feet)	Effective radiated power (watts)
\1,2,4\	
Above 1,372 (4,500).....	65
Above 1,220 (4,000) to 1,372 (4,500).....	70
Above 1,067 (3,500) to 1,220 (4,000).....	75
Above 915 (3,000) to 1,067 (3,500).....	100
Above 763 (2,500) to 915 (3,000).....	140
Above 610 (2,000) to 763 (2,500).....	200
Above 458 (1,500) to 610 (2,000).....	350
Above 305 (1,000) to 458 (1,500).....	600
Up to 305 (1,000).....	\3\ 1,000

\1\ Power is given in terms of effective radiated power (ERP).

\2\ Applicants in the Los Angeles, CA, area who demonstrate a need to serve both the downtown and fringe areas will be permitted to utilize an ERP of 1 kw at the following mountaintop sites: Santiago Park, Sierra Peak, Mount Lukens, and Mount Wilson.

\3\ Stations with antennas below 305 m (1,000 ft) (AAT) will be restricted to a maximum power of 1 kw (ERP).

\4\ Licensees in San Diego, CA, will be permitted to utilize an ERP of 500 watts at the following mountaintop sites: Palomar, Otay, Woodson and Miguel.

[ 70 FR 61062 , Oct. 20, 2005]